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ORIGINAL ARTICLES

ARTERIOSCLEROSIS.*

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In considering arteriosclerosis we are approaching the origin of many diseases. The study of this process throughout the body tends to broaden our views of the nature and causes of local diseases by showing how largely they are due to antecedent widespread arterial changes. Arteriosclerosis is a primary pathologic process. There are no morbid anatomic changes preceding it. This name was given by Lobstein, but we are indebted to that apostle of modern pathology, Virchow, for the first thorough study and description. He called it endarteritis deformans and regarded it an inflammatory process, a chronic fibrous hyperplasia, analogous to what occurs elsewhere, affecting the coats of the arteries and producing thickening and hardening of the vessels, with subsequent degeneration of their walls, even to obliteration.

The term as now used covers atheroma, which as it occurs in the aorta is a disease long known. But little mention has been made of arteriosclerosis in our text-books until recent years.

Sir William Gull and Dr. Sutton, about thirty years ago, made thorough researches on the subject, especially as to the changes in the capillaries, arterioles and smaller vessels. Their findings and views are indicated by the name they gave the disease, arterio-capillary fibrosis. They claimed that the principal element of the disease was the fibrous proliferation of the internal coat; that the other coats were involved, but not so generally and constantly; that the artery became thickened and hardened with narrowing of the lumen and subsequent degeneration. They did not differ from Virchow in their views, but extended greatly our knowledge.

Lionel Beale, the eminent microscopist, found the thickening of the muscular coat which is sometimes observed was not a true hypertrophy,

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as that which occurs in the left ventricle in this disease, but a fibrous infiltration with degeneration of the contractile tissue.

Thoma and his pupils made extended investigations, finding the process also affected the veins and gave the appropriate name, angiosclerosis. Thoma contended that the primary lesion was in the media, a weakening or degeneration of the muscular layer with widening of the lumen, and that the thickening of the intima was a compensatory process —an effort of Nature to restore the normal caliber of the vessel.

The experiments of Thoma from which he drew these conclusions were, so far as known to the writer, confined to the aorta and apply to the atheromatous plaques. They consisted of injection of paraffin into the aorta at the pressure of 160 mm., the average of arterial pressure in such cases. The results showed that the nodules were smoothed out, which, he thinks, could not have been so, unless they were pushed back into a depression of the media at that point, due to previous degeneration of the media. A cross-section of the artery at this point after the paraffin injection may show, especially in advanced cases, that both coats are involved, but this would not determine which layer was first affected. If it be granted that the media was primarily involved and the intima later, this does not prove that the fibrous proliferation of the intima is a compensatory process. Moreover, these studies of atheroma in the aorta can not demonstrate the nature of the arterio-capillary process. The structure of the aorta is complex and differs materially from that of the arterioles and smaller vessels. These experiments of Thoma, or the inferences from his findings, can not apply to the arterioles, because they do not dilate as the aorta often does; hence no reason exists for compensatory contraction. On the contrary, the arterioles contract in the presence of an irritant or poison, which toxic substances are brought in contact with them through the blood stream. This corresponds with the law of reaction of the normal cell or protoplasm to the contact of an irritant.

The findings of Thoma are not confirmed by some recent experiments of Ophüls. He injected aortas with paraffin under the same pressure and conditions, but took only those of recent growth, decided, but not advanced atheromatous nodules, as the aim is to ascertain the seat of the primary lesions. There were no evidences of disease of the media. Cross-section of the vessel at the point of the nodule showed that the muscle formed a complete and uninterrupted circle: The nodule was flattened, as in Thoma's cases. This discrepancy in findings may be due to Thoma's experiments being made in the more advanced cases after both coats became involved.

The doctrine of compensation of the intima is attractive. Many recent writers have adopted it. But it seems questionable and should be regarded rather as an hypothesis. If, as it is said, the aim of Nature be to reduce the caliber of a dilated vessel she certainly overshoots the mark and leaves the artery narrowed even to occlusion. This narrowing of the lumen of the smaller arteries is the most damaging fact of the whole process.

In view of the above facts and considerations, and from a review of the findings of some of the most competent observers, I think we may say that the primary lesions of arteriosclerosis may be in any one of the three coats of the arteries or may occur simultaneously in all; that the greatest thickening is in the subendothelial layer of the intima displacing the fenestrated elastic membrane of Henle; that it is this thickening mainly which encroaches on the lumen of the vessel; that the elastic and muscular layers of the media are impaired or displaced. So that the walls of the vessel become composed chiefly of this non-elastic, nonfunctional, new fibrous overgrowth, which renders them hard and rigid and thus failing to assist in propelling the blood stream to the distal tissues and organs, thereby calling for increased work from the heart with resulting hypertrophy and increased blood pressure.

Arterial fibrosis may begin in the perivascular connective tissue, invading the adventitia and constricting the vasa vasorum, checking the nutrition of that section of the artery, causing the circumscribed form. This nodular or circumscribed form of arteriosclerosis affects chiefly the aorta and other large vessels. The nodules appear as small translucent pulpy patches protruding from the intima into the lumen of the vessel. Later they become more opaque with a yellowish color. These nodules may degenerate, soften and rupture into the vessel, producing the so-called atheromatous ulcer. The débris discharged into the vessel may cause embolism, and the seat of the broken nodule, perhaps further roughened by calcareous plates, favors the formation of a thrombus.

Microscopically, the degenerated nodule is composed of fat droplets, crystals of cholesterin and granular detritus with round-cell infiltration at the margin. The disintegrating nodule may extend outwardly through the media, distending the adventitia, causing aneurism.

Certain arteries are more frequently involved in arteriosclerosis than others. Bregmann, under Thoma's direction, found the ulna involved in 94 per cent., radial 86, anterior tibial 93, popliteal 79, cerebral 89, splenic 82, aorta 67. No mention in the list seen is made of the coronary arteries, which are among the most frequently affected.

In the order of importance, the cerebral, coronary and renal arteries should be placed in the first rank, because of the vital functions of the organs supplied. The changes of the arteries near the surface can be ascertained by inspection and palpation, but these should be supplemented by appropriate instruments for recording the tracings of the radial pulse and measuring the blood pressure. Perhaps the first sign noticed will be the prominent tortuous temporal arteries, but the carotid, branchial, radial, anterior tibial and the arteries of the foot should all be carefully palpated and compared. The diffuse variety of sclerosis being most common in the terminal vessels, they will usually be found uniformly thickened and hard, difficult to compress. A hardened artery should be distinguished from one of high tension only. Not infrequently the radial artery, for example, will be found irregularly hard and beaded to the touch. Sometimes calcareous deposits will make them of bone-like hardness. The vessels of the retina furnish a good field for observ-

ing directly the condition of the arteries. The changes there seen make it probable that similar changes exist in the cerebral arteries. Hemorrhage of the retinal vessels is often the first evidence of advanced arterial disease.

Clinically considered, the disease may be conveniently divided into three groups: those occurring in children and young adults, those of middle life, and the senile cases. There has been a general impression in the profession that arterial sclerosis is a disease of old age, only occurring seldom in middle life and very rarely in children. But extended examinations of recent years have demonstrated its prevalence in children and that nearly all cases have their beginnings in middle life.

Chiari found it in 25 per cent. of autopsies in cases of infectious diseases under 25 years of age. Symnitzky, in a similar series, found it in 27 per cent. and, omitting those under 2 years old, 48 per cent.

Wiesel published two years ago a report of autopsies in 300 cases occurring in children and young adults in Franz Joseph Hospital, Vienna. His examinations were extended and exceedingly thorough. The results show its surprising frequency in the infectious diseases. He found the characteristic lesions in 75 per cent. of the autopsies. These lesions were found not only in the aorta and large arteries, but in the terminal and smallest vessels. The greater per cent. found by Wiesel may be explained by the more thorough search and refined examinations. These results throw light on the pathogenesis of the arterial disease and demonstrate the potency of toxic agents in its production.

What becomes of the lesions that occur in the cases of acute infections which recover? Probably the morbid products are replaced by normal tissue. If so, why may not repair occur in cases in middle life and even to some degree in certain cases of old age. In the group of middle life, we see the manifestations of heredity. Some families develop the disease very early. Lithemia now becomes an active factor, and syphilis plays a prominent rôle. At this period the influence of continued muscular strain becomes apparent, as do also the effects of intoxicants. Here we usually first notice the increase of arterial tension. Nearly all the influences which produce the disease are active in middle life, and its early manifestations may be found if carefully looked for. The senile cases present a familiar picture with the characteristic features more marked, except that high tension and cardiac hypertrophy are frequently absent. The signs of gradual decadence from arterial degeneration, especially of the cerebral vessels, are more in evidence. But the accidents of the disease, such as hemorrhage, embolism and thrombosis, are not more frequent than in the later middle period or the decade between 50 and 60.

ETIOLOGY.

There is no single sufficient cause. Many factors conduce to the one result. Heredity, toxic agents and strain will cover most of them. The toxic factors may be divided into extrinsic and intrinsic—those entering from without the body and those developing within. Of the former the toxins of various infectious diseases, alcohol, lead and tobacco may be

mentioned. The autotoxins may arise from faulty metabolism, defective elimination and the products of impaired or perverted intestinal digestion. Excessive eating, particularly the proteids, is a very common factor. Prolonged muscular or mental strain has a very decided influence. In the rush and worry of business and the stress of our complex and strenuous life this factor comes into prominence. Allusion has been made to the influence of infectious diseases in developing arteriosclerosis in the young. The results are also found in later life. Syphilis has long been known as one of the leading causes. Typhoid fever has an important rôle, as has been shown by Thayer in his observations of patients months and years after recovery. He found evidences of sclerosis in 48 per cent., whereas in a like number of the same ages, 10 to 50 years, of those in ordinary health who gave no history of typhoid, only 17 per cent. showed signs of arterial disease.

The influence of sex is marked. In middle life there are at least three times as many cases among men as in women. The difference is not so great in the senile cases. The comparative frequency of the disease in men illustrates the influence of muscular strain and intoxicants in its causation.

Arterial hypertension has an important influence on the extent and results of sclerosis. It is present in nearly all cases. According to the view resulting from the investigations of von Noorden, Klemperer and others, this condition is due to toxins circulating in the blood which in younger life are eliminated by the kidneys, but later the kidneys, failing to completely eliminate the toxins, the latter are deposited where they will do the least harm, viz.: in the fibrous tissues. In the process the coats of the arteries are injured and the characteristic hypertension is set up. This hypertension is not steady, but occurs in paroxysms due to the absorption of a large amount of toxins from the intestinal canal. But whatever may be their mode of action in producing high tension and sclerosis there seems to be no question as to the fact.

SYMPTOMS.

The general symptoms of arterial sclerosis are not characteristic and as usually observed are connected with symptoms pertaining to the associated diseases of the organs affected by the sclerosed arteries. It is insidious in the onset and slow in its progress, often without pain or discomfort which would lead the patient to consult his physician. It is usually first recognized when he comes on account of some other or incidental ailment. But there are early symptoms which are suggestive and should lead to the careful physical examination of the palpable and visible arteries already mentioned.

Huchard, Traube and others affirm a prodromal and curable stage where the toxemia causes spasm of the arterioles, increased force of the heart from increased resistance. This condition is likely to be manifested by drowsiness, lethargy, morning fatigue, coldness of the extremities, migrainous or neuralgic attacks with accentuated second aortic sound. These symptoms occurring in a man of middle age who lives well

should suggest possible arteriosclerosis. If in addition to the symptoms quoted we find frequent vertigo, despondency, unusual irritability of temper, persistent insomnia, impairment of memory, momentary loss of consciousness, or mental confusion, slight convulsive seizures, tingling and numbness of the extremities, slow pulse and high tension, it amounts to a probability of arterial changes already present. Most of these symptoms point to cerebral disturbances of the circulation connected with arterial sclerosis. Changes in the manner and habits of the old, such as are commonly termed childishness and dotage, denote arterial changes in the brain with impaired nutrition. Sudden and striking symptoms often occur due to hemorrhage of cerebral arteries or rupture of miliary aneurisms, or more frequently to occlusion of the vessels from thrombosis or embolism, such as apoplectiform attacks, monoplegia, hemiplegia, with various motor and sensory disturbances according to the location and extent of the brain lesion. These conditions produce a train of symptoms which can not here be even mentioned.

The clinical manifestation pertaining to the heart may be briefly alluded to. The first change is simple hypertrophy from resistance in the terminal vessels; as the disease progresses the coronary arteries become involved, and this occurs in nearly all cases. The nutrition of the heart muscle is thereby impaired. Fibrosis and myocarditis frequently follow with degeneration and dilatation. Sclerosis of the coronary arteries was first well described by Jenner, in 1775, who showed its relation to angina pectoris. But he examined the heart of Thomas Parr, who died at the age of 150 without disease of the heart or vessels. Quain found sclerosis of the coronaries in 80 per cent. after the fortieth year. Perhaps this may explain why we moderns so seldom reach the centenary mark, to say nothing of fifty more.

Harlow Brooks, in an examination of 400 cases, found sclerosis of the visceral arteries in 368, and of these 270 showed the disease in the coronary arteries. The average age in these cases was 45. Muscular lesions were apparent to the naked eye in all but 15. In 215 the changes were of a degree to be noted as a contributory cause of death. Heart disease has been too generally regarded as a lesion of the valves only. The observations quoted and many others of similar findings demonstrate the prominent rôle of sclerosis of the coronary arteries and consequent muscular degeneration in the pathology of heart diseases. The symptoms of coronary sclerosis and muscular degeneration will be those of depressed function; feeble and irregular contractions. Dyspnea on exertion is the most important and constant symptom.

The valvular lesions due to atheromatous changes should be considered in this connection, but the limits of this paper prevent. For the same reasons we can merely allude to the important relation of arterial fibrosis to chronic nephritis. This arterial change is probably the primary lesion in the majority of the cases of Bright's disease, but the changes so soon affect the renal functions that the symptoms due to these disturbances predominate and the clinical picture of nephritis occupies the field. There are many cases where the fibrosis is outside the

arteries at first, in the perivascular connective tissue, and extends through the adventitia to the inner coats. The toxemia resulting from nephritis extends and increases the systemic arterial disease. In the cases with associated Bright's disease and cardiac hypertrophy there is marked arterial hypertension.

Sclerosis of the gastrointestinal arteries, while not so frequently found, is important and may explain obscure symptoms in diseases of these organs, particularly attacks anginal in character, also those of depressed functions. The same may be said of arterial disease of the pancreatic and hepatic arteries. All of the organs may be affected, but usually the principal clinical manifestations pertain to few in a given case.

TREATMENT.

If it be true that toxic agents, errors in diet and strain are leading factors in causing arteriosclerosis, then it must be admitted that there is promise in prophylaxis and a stage of the disease where much may be done to modify its progress. Unfortunately these cases are not usually seen early, unless they are discovered incidently while seeking advice for something else. It is very important that the doctor should be on the lookout for the early manifestations, bearing in mind that it begins in middle life in most cases, that it is not attended by any marked symptoms at first and very liable to be overlooked. Individual predisposition, hereditary or acquired, should be ascertained. The family history is important. Lithemic patients should be carefully watched, appropriate dietetic and hygienic regulations carried out. With the first indications of the disease the patient should be impressed with its significance—its insidious nature and steady progress with the certainty of shortening life, and appropriate regimen adopted and maintained. The particular line of treatment adopted would be determined by conditions found, and the etiologic factors prominent in a given case. In general it may be said that the diet should be simple, carefully selected, easily digested and not large in the proteids; tea and coffee used sparingly, alcohol cut out entirely and tobacco in strict moderation, and in many cases not at all. The patient should maintain a moderate pace in all his activities. Hurry and worry never allowed. Excitement and emotional disturbances should be avoided, with special care to avoid muscular or mental overstrain. At the same time moderate and regular exercise and work are to be strongly advised. Warm baths and massage are of benefit.

The aim of medical treatment should be to restore disordered functions, to promote elimination, to aid digestion, gastric and intestinal, and to modify high arterial tension; also, if possible, to promote absorption of the fibrous proliferation. In the cases where the intestinal toxins are a factor, and this means, in my judgment, the majority, there is no better remedy than calomel. The low spirits of high tension are often quickly relieved by its use as a laxative. But greater benefits are secured by more continued use. Given in 1/10 grain doses three times daily for weeks is likely to correct intestinal fermentation and put the patient in a more comfortable state; or it may be given in ¼ or ½ grain doses

every night for a week or two, then renewed after an interval. Whatever its mode of operation, the results of calomel thus used have been, in my experience, very satisfactory.

The nitrites are generally recommended as vasodilators and relaxants. Their good effects in cases of hypertension are not questioned. Nitroglycerin is usually employed, but its effects are transient and pass off in about two hours; therefore, a dose given three times a day will not be of as much value as given two or three hours apart. Potassium iodid and sodium iodid have been used with benefit in these cases. They should usually be given in small doses—5 grains—three times daily for a few weeks and repeated after an interval. The iodids act as arterial relaxants and also to promote the absorption of inflammatory products. Time prevents mention of other remedies and measures important in the treatment.

The greatest function of the physician is to point out the means of prevention, to impress upon his patients their liability to these degenerative changes before they grow old in years and how the disastrous results of this process in its advanced stages may be largely avoided by a proper mode of living and they pass on safely to a green old age.

DISCUSSION OF THE PAPER OF DR. PITNER.

Dr. Ferd Engelbrectson, of Chicago:—The doctor covered a good many points in his fine paper, but still he overlooked one point in regard to arteriosclerosis which I consider very important. It is a physiological consideration. There are many salts concerned in the development of the osseous system, and after the bones are saturated, what becomes of these salts which are still introduced into the system with the food? The system is ordinarily not prepared to eliminate them. They must be deposited somewhere, and I think the non-elimination of these salts will produce many conditions including arteriosclerosis. The bones reach normally a stage saturation at the age of 40; this may be hastened or delayed by pathological conditions. At this stage the arteriosclerosis commences; to be diagnosed later by the signs and symptoms produced by this condition. From this point of view I think it is pretty hard to establish prophylaxis, and still at the same time, I know that the condition can be delayed considerably, and when present the symptoms can be relieved by improved circulation and elimination.

Dr. William J. Butler, of Chicago:—I wish to call attention to one or two points in connection with this paper. The author spoke of the use of potassium iodid and its influence on cardiovascular disease, I wish to refer to the reaction we were discussing a little while ago as being of some value. I think there has been quite a little said on the influence of potassium iodid in regulating arterial tension and favorably influencing cardiovascular disease, and likewise the influence of calomel. Now, it is exactly in these cases where the serum diagnosis of syphilis is of considerable value. I think it will be found in general that such lesions of the cardiovascular system as are dependent upon syphilis, whether it be an aortitis, arteriosclerosis, or a myocarditis in conjunction therewith, will be benefited by iodid of potassium or calomel, and the favorable influence of the prolonged administration of calomel spoken of can only be interpreted from that standpoint. In these cases undoubtedly the effect of antispecific medication against the primary disease of syphilis, which has involved the vascular system, will be found advantageous. The serum reaction for syphilis will prove of value in deciding the etiology in cardiovascular lesions.

Dr. R. B. Preble, of Chicago:—I feel some hesitancy in attempting to discuss a paper of this sort because of the great breadth of the subject. I can appreciate

how laborious the efforts of the Doctor must have been in the preparation of this paper, which practically covers almost all the diseases of the latter half of life, if we exclude from consideration the acute infectious diseases, and the various neoplastic processes which invariably make up the proportion of diseases which come to us in the latter half of life and are due to arteriosclerosis. What lies back of the arteriosclerosis, as the essayist has pointed out, is unknown in many instances. While syphilis is supposed to be the cause of it in some instances, it is not by any means in all, and I can not agree with Dr. Butler in saying that the beneficial effects of iodid of potassium are confined to those cases based on syphilis. I myself have the fullest confidence in the iodids, if continued, not for a week or a month, but month after month and year after year; they have a beneficial effect on these processes. One could offer evidence in support of that opinion, although it must be admitted that such evidence is not direct. The most direct evidence is by following the condition of the vessels, and one can in many instances find the vessels softened and the feel of them changes under the influence of potassium iodid.

Another point is the uncertainty of the prognosis of patients of this sort. No matter what the manifestations may be as to the renal, cardiac, cerebrospinal, or gastrointestinal conditions, the clinical picture varies in character, and these patients are liable to sudden interruptions in the course of the disease or to sudden death, particularly in these advanced cases of arteriosclerosis, cerebral hemorrhage or thrombosis may suddenly develop, or there may be some severe circulatory disturbance of the gastrointestinal tract, either thrombosis or embolism. On this account there is great liability of sudden death in these cases.

Dr. Joseph L. Miller, of Chicago:—Dr. Pitner has given us a good review of this subject, but, as Dr. Preble has said, it is so broad that it is practically impossible to cover it in the short time allotted for discussion. There are some points of interest which we should consider. From a pathological standpoint, arteriosclerosis may be subdivided into two distinct classes: Those cases in which the intima is involved, a type of arterial change which is noted under high pressure in chronic nephritis. The second group is that in which the media is involved. This is a form of arterial change which we find in elderly people in whom there is a calcareous deposit in the media, and the changes in the intima associated with it are usually secondary and are often found just over the area where we have the calcareous changes in the intima. These are the same changes as has been described by Wiesel in the acute infections. There exists here primary degeneration of the muscle, and a secondary deposit of lime salts. Changes of this same character may be produced experimentally by adrenalin, digitalin, and a great variety of substances, and even the iodids.

In the treatment of this class of cases, I agree with Dr. Preble that many of them which are not of syphilitic origin are benefited by the use of iodids. I would not go so far as Dr. Preble and say that we can see distinct softening of the arteries in non-syphilitic cases. The benefits derived may come from the lessened viscosity of the blood, which has been reported as taking place after the continued use of iodids in small doses; this lessens the resistance of the blood passing through the vessel.

Dr. C. D. Wescott, of Chicago:—This subject is one of intense interest to the eye doctor, for he has an opportunity to see the changes in the retinal vessels of these patients in the course of his routine examinations for refraction. With the ophthalmoscope we see changes in the vessels before a patient realizes that he is ill or before he has been placed under medical care. We see these retinal changes most commonly in middle life, and it has been my privilege frequently to inform such people who did not suspect any constitutional condition, that it would be wise to place themselves under the care of a good internist. The changes we see with the ophthalmoscope in these vessels, magnified about 15 diameters, are increased tortuosity, then an actual thickening of the coats, especially the middle coat, finally the so-called silver-wire artery when it has become almost or entirely obliterated. At the same time, we see turbidity of the

retina and a beginning haziness of the crystalline lens, due to the change in its nutrition when the change in the vessels has advanced. We can see with the ophthalmoscope the progress of these cases very nicely. After a little while we see hemorrhages in the retina—dot-like hemorrhages. We may also watch the improvement in these cases. In a man, 60 years of age, I have seen a considerable hemorrhage which interfered very much with vision and numerous smaller hemorrhages, entirely disappear under treatment, and the media clear up. What I have said is just a hint for the more general use of the ophthalmoscope by the general practitioner. Just as the oculist has been able to see the first evidences of nephritis and diabetes many times, so he sees these cases in the beginning when it is possible to check the disease by proper medical treatment.

SOME POINTS CONCERNING THE TREATMENT OF DIABETES MELLITUS, WITH ESPECIAL REFERENCE TO THE OATMEAL DIET.*

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It is a well-known fact that there are different types of diabetes mellitus. Some diabetics, particularly adults and those who are obese, grow very careless as to diet, disregard the directions of their physicians, but still show a spontaneous preservation of health, live to a ripe old age, and die perhaps of some other disease. Other patients, particularly young, spare and neurotic individuals, in spite of skilful treatment on the part of the physician and the most conscientious cooperation on their own part, will have the disease run a malignant course, terminating fatally, oftentimes in a few months. Between these two types—what one may call the benignant and malignant—is a large middle class of patients, where the future history of the case is to depend upon the careful recognition of the nature of the disease on the part of the physician, on his watchful care of the patient, and the conscientious following out of the dietetic and hygienic rules on the part of the patient. It should be, therefore, the first duty of the physician, when he recognizes the existence of diabetes in an individual, to classify as nearly as possible the particular case in question. This he does, first, by the subjective and objective examination of the patient, with careful consideration of the history. These points I need not dwell upon at this time. Secondly, there should be a careful study of the urine in its relation to food. Exact knowledge requires exact quantitative analysis of the urine, and quantitative estimates as to the amount and character of the food. Approximate estimates are all, however, that are commonly demanded. This approximate estimate as to the type of disease is made by having the patient for a few days on an ordinary full mixed diet, that is, one consisting of proteids, carbohydrates and fat in such amounts as the patient desires to take, the amount of each kind of food roughly estimated or even carefully weighed. The amount of urine, its specific gravity, its content in sugar and the acetone bodies is carefully noted. Then the patient is placed for a few

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days on a diet from which carbohydrates are removed, yet one sufficient in caloric value to meet the ordinary demands of the body. In the milder cases a prompt reduction in the amount of sugar is the result, together with a diminution in the amount of urine and a lessening of the thirst. In many instances the sugar will entirely disappear. Such a case, other things being equal, may be looked upon as of the milder type. In the severer types of diabetes, the sugar may not entirely disappear, in spite of the fact that the diet is wholly proteid and fat. This, of course, is but a rough outline of the manner in which the physician attempts to "get a line" on his case. There are many details which must be here omited.

It should be mentioned, however, that a sudden change from a full diet to a carbohydrate-free diet should be looked upon as attended by some risk, as acetone bodies, which are prone to appear in moderate amount when such a change is made, may appear in large amounts and carry with them some danger of acidosis if the rigid diet is too long continued. But the first point I wished to make was that the physician should, by a careful study, as I have briefly outlined, attempt to classify the individual case.

Now, by placing the patient upon this diet and removing the carbohydrates from the food for several days, a second object is attained, and that is the establishment of tolerance for carbohydrates.

A fundamental conception of diabetes, though it must be admitted that much of this conception is largely theoretical, is that the cells and tissues of the body are, for some not clearly understood reason, unable to utilize the sugar that is brought to them in the blood. We may conceive of these cells as having been overworked, as being incompetent to utilize in the production of heat and energy the sugar that is set before them. By keeping the carbohydrates from the food, less sugar is produced, less work in the way of metabolizing the sugar is demanded of these tired, incompetent cells, and they are given a rest. In this way they acquire a tone so that after a period of carbohydrate-free diet they may again be able to utilize the sugar. We find, therefore, after these carbohydrate-free days, that if carbohydrates are added to the food, the body is often tolerant of what before it would not tolerate. The principle involved is the same as that applied in the treatment of other organs that have become for the time-being incompetent. It is the same principle that is applied in the treatment of an incompetent heart where, by placing the patient at rest in bed, a heart again acquires tone and becomes tolerant of an amount of physical work that before it could not endure. So one of the underlying principles in the treatment of diabetes is to keep tolerance at as high a mark as possible. To this end it is often necessary that patients should be placed, every few weeks, for a day or for several days at a time, upon a diet from which carbohydrates are strictly excluded, in this way again and again re-establishing tolerance.

Another important point to remember is that in not a few cases, particularly of the milder type, the presence in the urine of a moderate amount of sugar is not, after all, an indication of serious evil. We must

look at our patient as a whole, and not have our mind directed too intensely to the presence or absence of sugar in the urine. Not only the presence of acetone bodies and ammonia should be watched, but it is of great importance to note the preservation of weight, of good appetite, of energy, and of ability to do physical and mental work.

As is well known, one of the dreaded complications of diabetes is coma. The conception of this is that it is due to an increase of acid bodies, particularly the so-called acetone bodies in the blood. There are two things that have been proven by experience to be of a great value in the warding off of coma. Drugs, as a rule, have little value in the treatment of diabetes, except that symptomatically opium is sometimes of benefit; but the use of alkalies where coma seems impending, as evidenced by the increase in the acetone bodies and ammonia in the urine, is of unquestionable good. Bicarbonate of soda can be given by mouth or, if coma seems imminent, can be given per rectum, subcutaneously or intravenously.

A second fact that clinical experience has clearly demonstrated is that the diabetic can not be kept for too long a time on a diet that is entirely free from carbohydrates, without danger of coma. To this end all our patients have to be given sooner or later a certain amount of carbohydrates. When coma threatens as the result of keeping the patient for too long a time on a proteid-fat diet, it may sometimes be warded off by adding liberal amounts of carbohydrates to the diet.

I have spoken of the importance of establishing tolerance and of warding off coma in diabetes, and I wish here to say a word concerning the value of the oatmeal diet in these two particulars, that is, its value as an aid in establishing tolerance and in warding off coma. A few years ago von Noorden advocated the use, in a restricted group of diabetics, of an oatmeal diet. This diet consists of 250 grams of oatmeal, 250 grams of butter, and the whites of from six to ten eggs. The oatmeal should be thoroughly cooked with water for two hours; then the butter carefully stirred in, and the whites of the eggs stirred in last, or even after the oatmeal has been taken off the stove and is cooling. This amount constitutes the diet for an adult for twenty-four hours. It should be divided into five to eight meals, and may be taken either as a thin gruel, as mush, or it may be fried or rather just browned and served as fried mush. Slight variations from this are, of course, allowable, and a cup of clear coffee, a glass of sour wine, a stick of celery, or two or three slices of tomato may be allowed with the oatmeal, to relieve the monotony of the diet.

At first thought one would say that this diet would not be tolerated for any length of time by an ordinary stomach. Experience, however, shows that patients, often patients with delicate stomachs, and even children, will take this oatmeal for several days with very little complaint. Occasionally a stomach is rebellious, and this form of treatment has to be given up.

The second objection, that so large an amount of carbohydrates as is contained in the oatmeal would surely increase the sugar in the urine,

and that the fat might increase the acetone bodies, can only be met by the statement that in selected cases the sugar disappears as well as the acetone bodies. Just how this works is a matter for speculation.

Now, a point that I desire to emphasize is that this oatmeal diet is not in any sense a cure for diabetes. So far as I know, there is at present no cure for this disease. Exceptionally we hear of a case that has apparently recovered. The field of operation of the oatmeal diet is limited. It is not suited to the milder cases; it may make them worse; von Noorden expressly warns against its use in the milder type of disease. I have found it of greatest value in cases of diabetes of the severer type, where on the ordinary diabetic diet the case seems to be going wrong, acetone bodies are appearing in the urine, and the patient is gradually losing strength and weight.

Where it works favorably, under its influence the acetone bodies may disappear from the urine, and a temporary increase in tolerance for carbohydrates is manifest. I have been particularly gratified at the results in several cases of diabetes in children. In this form, a notoriously severe type of diabetes, I have seen the sugar entirely disappear from the urine and remain absent for several weeks. In one case of typical diabetes, the child is alive at the end of a year and a half, and with ordinary care the urine is free from sugar. This was a typical severe case of diabetes that was resisting the ordinary diabetic diet; but on the oatmeal diet within three days the urine was free from sugar, and the results in the year and a half following this have been, as I have said, most happy.

I have spoken of the use of the oatmeal diet merely in outline. Further details may be found in an article in *The Journal of the American Medical Association* for March 14, 1908. There also will be found references to von Noorden's original article. In this discussion of the treatment of diabetes, which is necessarily brief, because of the time limit set for these papers, I have merely tried to bring out a few of what seem to me important points, and I would, in summarizing, emphasize the importance of accurate classification of the individual case of diabetes as it comes to us. There should be strict individualization in the treatment of this disease, as of most others. In the second place, I would emphasize the importance of attempting to keep tolerance at as high a mark as possible; and, lastly, I would call attention to the great value in a restricted group of the severer cases, of the oatmeal diet of von Noorden, its value showing particularly in the aid it gives us in warding off coma and in establishing tolerance.

DISCUSSION ON THE PAPER OF DR. HERRICK.

Dr. Frank Billings, Chicago:—I desire to say a few words on this subject because I have had some experience with this treatment. I unreservedly agree with all that Dr. Herrick has said; but until we know more about the cause of diabetes our management of patients suffering with the disease must be along the line of experiment which will be best suited to the individual case. It is interesting to know that at the German Congress of Internal Medicine, von Noorden and his experimenters have just made a report which some of you may have seen. Dr. Osler, in a recent number of *The Journal of the American Medical Association*, refers to this report. von Noorden in his work on diabetes

points out that there is a relation between the secretion of the thyroid gland and the pancreas which has to do with the production of glycosuria. In the experiments made they have found that the extirpation of the thyroid gland in dogs renders all experimental lesions of the pancreas void as to diabetes. We know that by certain experiments on the pancreatic gland we can produce artificial diabetes. If the thyroid gland is removed in dogs, then by irritation of the pancreatic gland one can not produce diabetes. With the thyroid gland removed if we irritate diabetic center in the floor of fourth ventricle clinically diabetes can not be produced. Here is a step in our knowledge which may be utilized.

As to the oatmeal treatment, I have used it since von Noorden announced it. The amount which Dr. Herrick enumerated as being advised by von Noorden for an adult weighing 150 pounds, is twice the number of calories or heat units necessary for a healthy man. It amounts approximately to 4,000 calories, or heat units. Chittenden and others believe that 20,000 calories are too much for the ordinary working man. In combining the amount of oatmeal, butter, and egg albumin, as advised by von Noorden, we use twice the amount necessary for a man to do ordinary work. In children it is necessary to cut that amount in two, perhaps one-half or two-thirds for a child, and in other individuals and grown people, who are hungry with that amount of food, they will sometimes do well on a large amount. I have a man at the Presbyterian Hospital who is getting twelve ounces of butter, twelve ounces of oatmeal, and the whites of about twelve eggs in twenty-four hours. He expresses himself as satisfied, and even on that large amount of carbohydrate and of fat, his sugar has declined from 5 per cent. to 1 per cent. As Dr. Herrick has said, I have found but few people who dislike it. I have kept children on it three weeks for the first trial, then for a week or a month at a time. Grown people complain more than children. Some grown people will take it for a week or two weeks at a time. Every one will take it for a few days at a time for two or three weeks out of every month. And another remarkable thing is, as Dr. Herrick has pointed out, the rapidity with which sugar will disappear from the urine. Many a time I have seen urines containing 3, 5 and 6 per cent. of sugar, clear up so that the sugar would disappear within forty-eight hours. In other words, the urine would become sugar-free on that diet. I can not say that it does this in all patients. In chronic cases of diabetes that have been under observation for years I have had two deaths, the patients going rapidly into an acute coma, in spite of all the measures that we used, the individuals dying within a few days from the commencement of the von Noorden diet. These are the only two disastrous results I have had, because I have been more cautious since that time. I have not only seen beautiful results, such as the disappearance of sugar from the urine, but the disappearance of diacetic acid and acetone from the urine. I recall the case of a girl, 6 years of age, in the Presbyterian Hospital, who, with 5 per cent. sugar in the urine, was passing over 1,600 c.c. in twenty-four hours. The first day, when she was put on a diet of one slice of bread, the sugar remained stationary. She was then put on the von Noorden diet, and the sugar in thirty-six hours was 1 per cent., and the urine which was marked loaded with diacetic acid and acetone, was free from these bodies within forty-eight hours. That is one favorable case as showing what occurs in children. I think Dr. Herrick has had better results than I have in treating children by this method of dieting. I have had at least ten children upon this diet. I have had children do well with this diet for a few months, in that the sugar would disappear, and when I would put them on a standard diet, shortly after which the sugar would again return. But putting them on the von Noorden diet again the sugar would disappear; putting them on the standard diet again the sugar would return, and I have kept this up in some cases until the von Noorden diet would do nothing, and the patients would go finally into a comatose state and die.

As to other forms of diet, I have tried potato diet in the same way, but not with as good results, because patients will not take as much bulk of potato and butter in my experience as they will of oatmeal.

DR. GEORGE EDWIN BAXTER, of Chicago:—I would like to ask Dr. Herrick to state in his closing remarks the amount of exercise that these patients are allowed during the oatmeal diet; whether they are kept at rest, or are allowed the normal amount of exercise?

Dr. Herrick (closing the discussion):—In answer to the question asked by Dr. Baxter, I will say that, as a rule, exercise dose no harm in diabetes. In fact, moderate exercise is rather beneficial, and in putting patients upon this diet I have never restricted them as to exercise unless there is some special reason for it.

I am glad Dr. Billings brought out some of the points more sharply than I did. I am sure, that oatmeal diet is a valuable therapeutic agent. Nevertheless, I am firmly convinced it is likewise a dangerous therapeutic agent, and I would repeat, I do not want to convey the impression that this oatmeal diet cures diabetes. I have seen what I regard as wonderfully favorable results from it in children. I have in mind one little girl of twelve who has lived a year and a half with only occasional traces of sugar in the urine at any time during this period. During that time her father, a physician, has examined her urine every single day. When a child comes into the office, as did this little girl, passing 4,000 c.c. of urine containing diacetic acid; with thirst, and all symptoms pronounced, in spite of the ordinary diabetic diet, the child evidently running downhill, and is put on the oatmeal diet and has the sugar disappear inside of three days and lives for a year and a half, with practically no return of the old symptoms, it means something. To be sure, she is now living on a carefully selected diet that is not rich in carbohydrates, but when we get any such result as that in a child there is surely something to this method of treatment.

I am glad Dr. Billings mentioned some cases of the severer type which do not yield to this diet. I believe firmly that the severest cases will not yield to any diet, and that this is merely a temporary expedient to tide them over a danger period when coma is threatened. I have now under observation a case of this severe type which is resistent to any kind of diet, including the oatmeal diet. She is steadily losing ground, and in a few weeks at least, I expect a fatal result will follow.

One other point in using this diet: It is not wise to stop it too abruptly. There is danger attached to doing that. von Noorden had some disastrous results in his wards at first, by changing too suddenly from the oatmeal to a proteid diet. The change is to be gradual. That is a good rule to follow in changing from one kind of diet to another in all cases of diabetes. So I would say, while I regard this as a valuable therapeutic agent, I believe it is to be used only in selected cases, and we should not employ it with the expectation that we are going to cure diabetes, and further we should look upon it as a therapeutic agent that has in it the possibilities of danger.

BATHS AND EXERCISES IN THE TREATMENT OF HEART DISEASE.*

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(1) Baths.—When after my return from Germany in 1893 I published the first paper on Nauheim baths that had appeared by an American physician, very little was known in this country either of this now famous resort or of the effect of Nauheim baths on the heart and circulation. So much has been written on this subject since then that now most physicians have a general notion at least concerning them and a

* Read in the Symposium on Therapeutics at the Fifty-eighth Annual Session of the Illinois State Medical Society, May 19-21, 1908.

few possess a practical knowledge of the same. It will suffice, therefore, to describe them briefly as consisting of saline thermal and carbonated baths which range in temperature from about 95 F. for the initial one to 85 F. for those terminating the series. At first the water is mildly saline, approximately 1 per cent. of sodium chlorid and a tenth of 1 per cent. of calcium chlorid, and is not charged ordinarily with carbonic acid. From time to time the percentage of salts is increased until the sodium reaches 3 and the calcium 1 per cent. and the water is carbonated, so that with low temperatures the baths are strongly saline and effervescing.

The chief characteristic of the Nauheim springs is their richness in calcium chlorid and other chlorid salts, as well as in carbonic acid. But in this country the notion seems to prevail that the calcium salt is not necessary, and hence ordinary sodium chlorid or sea salt is used. In the belief that calcium chlorid is highly useful, if not essential, I have never failed to use it, and yet I am frank to confess that the beneficial effect of this therapeutic agent depends not so much upon the exact composition of the waters as on the correct application of the principle underlying their use. For the purpose of charging the baths with carbon dioxid, use may be made conveniently of the tablets and sodium bicarbonate sold at an exorbitant figure under the name of Nauheim Bath Salts or of commercial hydrochloric acid instead of the tablets mentioned. The small amount of sodium bicarbonate and acid varies according to the strength of the bath and the quantity of water required to cover the patient, but for every ten gallons may be said to range from 2 ounces of soda and 3 of acid for weak baths to 32 and 48 ounces, respectively, for strong, cold ones.

The length of time patients remain in the tub varies from six to eight minutes for the initial bath to twenty toward the end of the series. The duration of each immersion must be determined by the patient's reaction, the same as are the strength and temperature of the water. Precise rules can not be laid down, but the character, temperature and duration of each bath must be ordered by the physician after a careful examination of the individual and an inquiry into the patient's reaction and sensations during and following the previous bath. Although there is a certain sort of routine to be followed in the ordering of treatments, still only by judicious consideration of all the conditions attending this mode of therapy can one hope to accomplish gratifying results. Experience is assuredly a requisite to success in this as well as any other method of management.

The principles underlying this form of hydropathy should be understood by the physician who would apply it successfully. First, the temperature of the water should not be so high as to make it feel hot to the patient, since hot baths are weakening to the heart. Consequently a higher temperature than 95 F. should not be prescribed, and it is better to begin with 93 or 92 F. if it is thought this can be endured without chilliness. If properly constituted, such a warm or tepid, weakly saline bath

is sedative to a feeble heart and not stimulating. Secondly, such sedative or soothing baths are to give way to cool, stimulating ones only gradually as the heart gains in strength and the general circulation improves. It is only now when positive gain in cardiac power is demonstrable that the baths may be made decidedly cool and stimulating by the higher percentages of CO_2. In a word, Nauheim baths are cool, not hot, and are intended to tone up and invigorate capillary circulation, not to dilate the vessels and by relaxing the skin promote perspiration, as do hot ones. This result is accomplished solely through the cool temperatures, but also by the saline and effervescing character of the waters. The effect is the same as that produced by bathing in the ocean surf, but the application is wholly different, since, cardiac asthenia being present, exertion in the water is strictly forbidden and the patients remain at absolute rest while in the tub.

The modus operandi of this balneological treatment has never been satisfactorily determined, but the effects are plainly apparent. The pulse grows slower, stronger and more regular, the area of cardiac dulness diminishes and the impulse acquires greater strength and definiteness. This gain in cardiac power is shown by increased diuresis, lessening of congestions and improved color of the skin. At the same time the heart-tones and murmurs change in one way or another, but always in such a manner as attests augmented myocardial competence. The patient's subjective sense of improvement keeps pace with that in the objective signs and each daily treatment is looked forward to as refreshing and restful.

Wachenfeld, of Bad-Nauheim, has recently published a paper in the New York *Medical Record,* in which he attributes all the benefit of this and other auxiliary forms of treatment to improved metabolism and hence nutrition of the heart muscle. Indeed, he goes so far as to deny the possibility of dilatation of the heart-cavities and to explain the reduction in the area of dulness observed as due to change in position and degree of hypertrophy of the organ. That improved metabolism and nutrition of the myocardium take place goes without saying, but so they do also when benefit follows rest in bed and a course of digitalis, but to attribute the changes witnessed to this factor and this alone seems to me too radical. There must be some mechanical factor at work through the nervous system which as yet escapes our detection.

This balneological treatment is suited to most forms of cardiac and circulatory derangements, in particular myocardial incompetence without endocarditis, and yet valvular insufficiencies of inflammatory origin may receive remarkable benefit. The results in children a few weeks after an acute rheumatic endocarditis have been most striking. As might be expected, stenoses are not so much benefited as are insufficiencies, and should receive very careful and intelligent management by means of this therapeutic agent; a statement not limited, however, to these baths. It is my experience also that cases with chronic fibrous mediastinitis are not likely to be benefited. Pronounced arteriosclerosis likewise is a con-

dition which calls for extreme caution if it does not actually contraindicate the baths. Aneurism and dilation of the aorta, in my opinion, should never be treated in this manner, for, even though improved cardiac power may ensue, the vascular disease can not be improved and it is theoretically possible, nay probable, that the increased hypertrophy of the left ventricle may serve but to distend the sac and augment the damage to the aortic coats. I have known of a case of this kind which received a course of the baths at the hands of a noted Nauheim physician, with, as was asserted, appreciable benefit, and yet the man died suddenly three days after leaving the resort. Lastly, it is my opinion that in cases of extreme cardiac incompetence with extensive dropsy this mode of therapy would better be deferred until rest in bed and medicinal treatment have improved the condition, or only weak baths should be tried cautiously in conjunction with these latter agencies.

(2) Exercise.—These are of two kinds, the so-called resistance exercises and medical gymnastics. The former have been extensively exploited by Theodor Schott and sometimes are spoken of by his name. Their popularity in Bad-Nauheim is by no means so great as in England and the United States. Whether this is owing to the dislike of Schott felt by most of the profession in that resort or to an honest doubt of their efficacy is hard to determine. They consist of slow, gentle movements of extension, flexion and rotation of the extremities and trunk executed against carefully measured resistance by another person trained in the work. A detailed and illustrated description of these movements may be found in various treatises upon the management of heart disease, but, since they are capable in the hands of the untrained of doing far more harm than good, they are rarely available. The effects observed are similar to those of the baths, namely, slowing and strengthening of the pulse with corresponding reduction in the area of cardiac dulness, presumably, therefore, of dilatation, and increased strength of the heart-tones. These results are due, it is claimed, to dilatation of the intermuscular arterioles incident to muscular contractions and consequent unloading of the distended heart.

It is my belief that these resistance exercises are of aid in restoring compensation to greatly dilated and enfeebled hearts. Muscular exercise is an important auxiliary to the heart in maintaing blood-flow, but, this being forbidden or impossible in cases of extreme myocardial incompetence, the driving force of the heart soon becomes unequal to the task of keeping up the circulation. Consequently systolic blood-pressure sinks still lower and cardiac cavities grow still more distended. If now gentle resistance movements are instituted, they promote better venous flow and assist the overburdened heart. It is so easy, however, to do the opposite of what is intended that extreme caution and positive skill are required if benefit is to accrue.

It was the foregoing considerations regarding the desirability of muscular exercise in cases of myocardial inadequacy without valvular disease which several years ago led me to adopt so-called medical gymnastics for

the relief of persons still capable of exercise without serious distress. These gymnastics, like resistance movements, are performed with the aid of a trained assistant who can maintain a close watch on the pulse and respiration and who knows just the sort of exercises that will produce the effects desired.

These medical gymnastics may be divided into passive and active and in both kinds consist of deep breathing movements, rolling, turning, twisting, flexion and extension of the trunk which all have as their object the slowing and strengthening of the pulse. In this respect they produce effects similar to those of resistance exercises, but quite different from those of ordinary physical exertion, since this latter causes acceleration of the heart's action, and when the myocardium is weakened a lowering instead of a rise in blood pressure, and hence is apt to prove injurious.

The investigations of Levin demonstrated that, if these medical gymnastics are to slow and invigorate cardiac contractions, the individual must breathe regularly and synchronously with the various muscular movements, for so soon as he holds his breath the pulse becomes accelerated and the face congested, thus showing at once a strain on the cardiac muscle.

Herein, then, lies the great distinction of these from other forms of active exercise and which renders indispensable the supervision of a trained medical gymnast. Fortunately, we have such a trained expert in Chicago, and to him I am now in the habit of sending such of my patients as are likely to be benefited by these exercises and can afford to take them. These cases are, as already stated, individuals who begin to manifest the symptoms and signs of cardiac feebleness which is generally the result of chronic myocarditis. In a few instances I have tried the effect in cases of valvular disease with beginning inadequacy of poorly established compensation and have been gratified by the results.

It would require too much time to report cases illustrating the good effects of this plan of therapy, and hence these will be stated in only a general way. During and directly after the treatments the action of the heart is slower and stronger than before, while the patient himself is conscious of the benefit by a feeling of ease or lightness in the chest and a general sense of well-being. As time goes on he also notices a reduction in his abdominal girth where this has been excessive and he finds that his breathlessness or palpitation on exertion has left him, so that it has been difficult in most cases to prevail upon the individual to persist in this plan of treatment. It is my custom to keep close watch of the effects on the heart by a weekly examination, and almost without exception I have noted a reduction in the area of cardiac dulness and an improvement in the strength and purity of the heart sounds, with in some instances a disappearance of the systolic apex whiff denoting muscular mitral incompetence.

How these medical gymnastics produce their beneficial result I will not discuss, but will say merely that this appears due to a better circulation in the veins of the extremities and abdomen, together with improved

cardiac metabolism, so that the heart is enabled to discharge its contents with greater force. In most cases a small amount of medicinal treatment with cathartics, vasodilators and strophanthin or digitalin has been employed either in way of preparation for the exercises or to increase their efficacy. But a very large share in the gain made by patients has been due to the medical gymnastics and not to medication.

In conclusion:

1. I feel justified in recommending medical gymnastics as an important part of the management of myocardial incompetence when this is not too advanced.

2. They should be performed only with the aid of a trained assistant who understands the object and kind of exercises to be given and who will maintain close watch upon the pulse and respiration.

3. These medical gymnastics produce results similar to those of resistance exercises and in suitable cases more quickly and powerfully.

4. Individuals with myocardial incompetence should not be allowed to substitute for these medical gymnastics so-called self-resisting movements at home.

5. The effect on the heart should be watched by a physician who can judge of the degree of benefit obtained and how long the exercises should be taken.

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DISCUSSION ON THE PAPER OF DR. BABCOCK.

A Member:—Does parenchymatous nephritis in the presence of myocardial disease, contraindicate the Schott treatment?

Dr. Robert H. Babcock:—I think not unless it be acute with great dropsy. In fact, physicians at Bad-Nauheim pay very little attention to the state of the kidneys in most of the cases they treat. The temperature of the baths and the percentage of salts should be so carefully determined that the patient will not suffer a chill. When the baths are properly ordered, the patient reacts and the skin becomes hyperemic, and there is no internal congestion produced—quite the opposite effect, and I can not see why a chronic nephritis should contraindicate baths under these circumstances.

Dr. Arthur R. Elliott, of Chicago:—Dr. Babcock's paper is a contribution to the best element of the newer treatment of circulatory diseases. A comparatively few decades ago we regarded the circulation from the standpoint of the heart, and in those days the employment of so-called cardiac tonics were the main standbys in the treatment of circulatory diseases. In the light of the newer physiology of the circulation we now know that the treatment of the peripheral field in the circulation constitutes an essential part in the welfare of these cases, so that the use of massage, of baths, of resistive movements, and of the so-called vasodilators, has come into vogue, and they are of immense advantage to these cases. As to the so-called cardiac tonics, while they have a place large enough, it will be shortened in the treatment of these cases, and all very powerful drugs have to be well understood, their pharmacology familar to the physician employing them in order that they may not act deleteriously. Before their introduction some sixty years ago, and the same exists to-day, many patients with cardiac disease got well under rest and diet, and it is better for the physician to understand these accessory methods, these indirect methods of toning up a weak and degenerated heart rather than depend almost exclusively upon the cardiac stimulants.

Dr. Babcock (closing the discussion):—I believe the time is coming when physicians will recognize that measures of exercise and diet, hygienic measures of all kinds, will largely supersede the mere use of drugs, and that if physicians would give more attention to balneology and to rational exercise, passive and active, in the management of cardiovascular cases, they would be immensely surprised about the results. I believe that if these things were used at an earlier period, physicians would do much in the way of preventing serious cardiac breakdown. I take issue with some men in this country who believe that baths are suitable in cases of extreme cardiac asthenia, with dropsy. It is my custom to treat such cases by the ordinary measures of rest and cathartics and medicinal agencies until the circulatory derangement has been lessened, and then I find these baths of great service. I have found them of inestimable value in the treatment of comparatively recent endocardial lesions in children. I have seen children who, a few months before, had had what was believed to be endocarditis, who came to me with a loud mitral murmur that had completely replaced the first tone, and have seen those hearts reduced in size and the first tone return to the apex, showing that a large part of the leak was due to dilatation which was overcome by this plan of treatment, so that these patients have been sent home greatly improved. It was this observation which led physicians in Bad-Nauheim to say that the Nauheim baths were capable of producing recovery from endocarditis. I think their conclusions were erroneous, but the observations correct as to the benefit of the baths.

SOME PRINCIPLES OF TREATMENT IN CARDIOVASCULAR CONDITIONS.*

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The cardiovascular remedies may be subdivided into two groups—those which act chiefly upon the heart, digitalis and strophanthus, and those whose chief action is upon the vessels, the vasoconstrictors, adrenalin, caffein, camphor and strychnin, and the vasodilators, alcohol, nitroglycerin and the nitrites. In making such subdivision we must bear in mind that they are all cardiovascular drugs affecting both heart and vessels, however, in varying degree. In general this class of remedies is indicated where there is imperfect distribution of blood due either to cardiac insufficiency or lack of proper vascular tone. The prevalent idea that digitalis is contraindicated in myocarditis is not well grounded, although we must observe greater care in dosage, and the final results of treatment must, from the nature of the trouble, be less satisfactory than in vascular lesions with good heart muscle. In marked arteriosclerosis or bradycardia the digitalis often is beneficial.

It is unfortunate that a drug which possesses such a desirable physiological action should also have its objectionable features. The chief of these is its variable strength, irritating action on the gastrointestinal tract, and finally its cumulative effects. The physiological activity of the leaf depends upon the soil in which it is grown, the time of year it is gathered, the method of drying and especially the length of time it is kept in the dried state. Not merely does it vary in strength, but the

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proportion of the various active principles is not constant; for this reason digitalis preparations should be standardized physiologically just as the curative serums. It is impossible to overcome its irritative effects and cumulative action and still maintain its physiological activity, as both of these objectionable qualities exist in the isolated active principle. The best means at hand to avoid the cumulative effect is to use a preparation of known strength like the titrated tincture, and then carefully observe the urinary output, character and frequency of the pulse. To avoid its irritating action recourse has been made to subcutaneous and more recently to intravenous medication. When one preparation of digitalis fails to give the desired result we may resort to another form. It can not be too strongly emphasized, however, that the results depend upon the amount of active digitalis and not upon any particular pharmacopeal preparation.

The most important vasoconstrictor remedies are adrenalin, caffein, camphor and strychnin. These remedies are indicated where we have vasomotor paresis as in shock, chloroform or ether poisoning or the so-called heart failure of the acute infections. Adrenalin is one of the best remedies in shock, as it causes a very prompt rise in blood pressure by its action upon the nerve endings in the vessel wall. The increase in pressure is so marked that the heart is called upon to do an enormously increased work, which may be safely borne by the good heart muscle of the patient in shock but may lead to acute dilatation and serious consequences if the heart muscle is diseased, as is often the case in the acute infectious diseases. As a vasoconstrictor in the acute infections, caffein holds first place. Passler has shown that in animals, when heart failure had been induced by acute infection, the caffein caused a more pronounced and prolonged rise in pressure than digitalis. Camphor has practically the same action as caffein but is less constant in its effects. Strychnin has been extensively used in America as a heart and vasomotor tonic. The rise in blood pressure observed after its administration is due to stimulation of the vasomotor center and in animals is only apparent when given in doses sufficient to produce general spasm.

The vasodilator remedies are used chiefly to reduce hypertension, which is most frequently due to nephritis. It is not improbable that the high pressure in these cases is protective—an effort on the part of the organism to force more blood through the kidney and thus get rid of more waste. The work of Loeb and Strauss would indicate that lowering of pressure in these cases leads to lessened secretion from the kidney. However, when the pressure reaches 200 mm. of mercury the danger to the vessel wall is so great that nitroglycerin or sodium nitrite should be used.

TREATMENT OF ANGINA PECTORIS.

Before leaving the subject of vasodilators it may be advisable to consider the treatment of angina pectoris. Authorities are agreed that anginal attacks are usually due to disturbance in the blood supply of the heart muscle. Autopsy findings in patients who have suffered from

angina show arteriosclerosis of the coronary vessels and numerous areas of focal necrosis in the heart muscle. A few cases have been reported with normal coronaries, and here the attacks have been ascribed to vasomotor spasm of the coronary vessels. Since Brunton's recommendation of amyl nitrite and nitroglycerin for the treatment of an attack these remedies have been generally used. Brunton's observations were based on a single case where sphygmographic tracings showed a marked pulsus tardus during the attack, the pain disappearing and the character of the pulse changing after amyl nitrite. A review of the cases where pulse observations have been made during an attack shows that Brunton's patient in this respect was exceptional. In the majority of cases little change has been observed in the character of the pulse during an attack, and this conforms to what occurs in animals after ligation of the coronary artery. Clinical experience has shown that a rather small percentage of cases receive prompt relief with amyl nitrite or nitroglycerin, probably only those cases where vascular spasm plays a rôle. In the group of cases where the attack is due to obstruction by embolus or thrombus two therapeutic problems arise: shall we try to raise blood pressure and thus force blood through the anastomosing vessels to the anemic area, lessening the amount of infarction and by doing this throw increased work on a weakened ventricle; or shall we attempt to lower pressure relieving the heart work, meanwhile increasing possibly the area in which necrosis may occur?

This problem has received our attention during the past year. When the coronary arteries of a dog are ligated just sufficiently to cause slightly disturbed action, the use of adrenalin, while causing a momentary rise in pressure, is followed by dilatation of the left ventricle and death. If we use digitalis instead of adrenalin, the contraction of the ventricle becomes more complete as return to normal occurs, and then additional branches may be ligated without material disturbance. If nitroglycerin be used in place of the adrenalin or digitalis, there is some improvement in the heart's action, but further ligation leads to heart standstill. In other words, a heart under the influence of digitalis allows of much more extensive ligation of the coronary vessels without serious consequences than a heart under the influence of vasodilators. A more complete report on this work is to be published later; these results are suggestive at least that the digitalis group may be indicated in attacks of angina pectoris. In order to obtain the promptness of action required in these digitalis must be given intravenously and subcutaneously. For intravenous medication digitalin in doses of 2 c.c. has been shown to act satisfactorily.

TREATMENT OF ARTERIOSCLEROSIS.

In the medicinal treatment of arteriosclerosis only one drug has any claim of efficiency. Clinicians quite uniformly believe that alleviation of symptoms due to arteriosclerosis follows prolonged use of the iodids. Various symptoms, as angina pectoris, dyspnea, vertigo, become less marked after the continued use of 5 to 10 grains of sodium iodid three

times per day. Huchard believed its good effects were due to its vaso-dilator action. It has been shown, however, by Boehm and Berg and Stockman and Chartens that they do not lower blood pressure. There is no evidence that it has a specific effect on the arterial changes, excepting possibly those of syphilitic origin. The most logical explanation of its beneficial effects may be ascribed to its lessening the viscosity of the blood. Otfried Müller has shown that when a patient had received a total of about 200 grains in daily doses of 20 grains, decidedly lessened viscosity of the blood could be observed. It is possible that lowering the viscosity of the blood may relieve the heart in a measure of its increased work and in this way prove beneficial to the patient.

DISCUSSION ON THE PAPER OF DR. MILLER.

Dr. James B. Herrick, of Chicago:—It seems to me, such an excellent paper as this ought not to go by without some discussion. We ought to have more papers of this character dealing with common, every-day topics, such as the drugs we give and give so largely empirically. It has been a special pleasure to have listened to the paper of Dr. Miller, who has had such excellent clinical opportunities, and who has possessed the courage and the persistence to do such creditable laboratory work.

I was glad to hear him emphasize the fact that the preparations of digitalis such as we ordinarily use are not always reliable; that we as a profession should strive to have these drugs more accurately standardized. It is very essential for us to have accurate standard preparations of drugs, so that when we are called upon to prescribe them off-hand we know that they are reliable. But we must individualize in our treatment, and realize that what may be of benefit to one patient may in the same dosage be harmful to another. In other words, clinical experience and the study of each individual case can never be done away with, no matter how carefully drugs may be studied in the laboratory, and no matter how carefully the preparations may be made.

I was glad also to hear him speak of the use of digitalis in myocarditis. I know the teaching often has been that it is contraindicated in myocarditis; but certainly in some cases clinical experience shows that the remedy is of benefit here. He spoke of an irregular pulse as one of the evidences of the toxic effect of it, and he included the bigeminal pulse, which has seemed to me one of the earliest indications of the toxic or full effect of digitalis.

It may be, laboratory experiments and further observations may make it appear, as indicated by Dr. Miller, that nitroglycerin and the nitrites are not of as great value as they seemed to be in the treatment of angina pectoris. My experience, however, has been that there is no remedy in many cases—not all cases—of angina pectoris, that acts so promptly and so efficiently. I would not pretend to say what percentage of my cases of genuine angina pectoris have received temporary and usually very prompt relief from the use of nitroglycerin and amyl nitrite, and a good deal of relief from the long continued use of iodid of potassium, but it is no inconsiderable proportion of the whole number.

Dr. Frank Billings, of Chicago:—I feel as Dr. Herrick does, that this excellent paper should not be allowed to pass without some discussion from us. I am glad Dr. Miller has set forth clearly the uses and abuses of these remedies. Probably there are no drugs in the Pharmacopeia more abused than the so-called heart drugs, digitalis, cardio-vascular stimulants, and sedatives and digitalis probably the most of all. This is a drug which is commonly used in infectious diseases to stimulate a heart that is overburdened because of the infectious character of the disease and the toxicity of the blood. This is particularly true in pneumonia.

I want to mention another series of symptoms in addition to those given by Dr. Miller for the toxicity of digitalis. In addition to the symptoms manifested by the pulse and by the heart, there is pallor of the skin, restlessness, associated with drowsiness, and at the same time, there is a condition in which the patient is partially delirious. One sees this frequently where digitalis has been pushed in cases of pneumonia and also in the failing heart of the typhoid fever patient. This delirium, restlessness, and irregular pulse I have noticed in cases that I have seen in consultation. Nevertheless, it is the most useful of all the drugs we have for the heart in its various diseases, when properly used, as Dr. Miller has pointed out.

A word or two more. The experiments made by Dr. Miller show that in artificially produced obstruction of the coronary the use of cardio-vascular stimulants or sedatives is disastrous. On the other hand, agents like digitalis, which increase the energy of the heart muscle, are of benefit. That has been borne out by experience. This adds to the final evidence that is necessary. Why? First of all, every one who has had much experience with people suffering from angina pectoris has found that digitalis, judiciously used, has been of great value in warding off the attack. A second most efficient remedy to ward off attacks of angina pectoris is that sort of exercise which will increase the energy of the heart, and the so-called Schott physical movements do more to ward off anginal attacks than any other one thing because they improve the heart muscle and increase the energy of the heart. Digitalis does the same thing. If, on the other hand, it is pushed too much so as to produce a lessened energy of the heart it would be disastrous, as it has been in the hands of many who have employed it in this disease.

Nitroglycerin, next to digitalis, is one of the most abused drugs we have. It is given by many of us as a so-called heart stimulant, whether it be a vaso-dilator or vasoconstrictor. I remember once killing a patient with nitroglycerin. I was called in consultation to see this case with a surgeon. The patient was an elderly woman whom I had known for years. She suddenly tripped on the carpet and injured her hip. The surgeon arrived before I did and had made a diagnosis and directed his attention toward the treatment of the hip. As I looked over the woman, I said to him, "There is cerebral shock here, which was the cause of the fall, and the hip trouble was secondary." He said, "You are wrong." The woman was in shock; her pulse was feeble, and he said to me, "I want you to give nitroglycerin hypodermically." I hesitated for a moment, as he was one of my old teachers, but finally gave it, and that woman was dead inside of one minute. Nitroglycerin is just as harmful a remedy, when used injudiciously, as digitalis. What Dr. Miller said of digitalis and other drugs is absolutely true. Digitalis, as dispensed by the majority of druggists in cities and country, is absolutely inert. It is not worth the alcohol that is in it. I hope the time will soon come when the medical profession will not use digitalis and many other drugs that are given to us by the manufacturing chemists unless the printed labels show they are reliable and the doses to be used. The reason so many practitioners cease to have confidence in these drugs is because in many instances they are inert, and the next thing our profession ought to do through the American Medical Association, with its Council on Pharmacy and Chemistry, is to have somewhere in the United States some official body that will standardize our drugs as they are now standardizing sera.

Dr. S. E. Munson, of Springfield:—I want to commend Dr. Miller's paper particularly because Dr. Baxter and myself labored very hard to get up a symposium on therapeutics, and while I do not wish to speak disparagingly of any of the papers that have been read, it is along a particular line that we planned this symposium, and I think you will agree with me that this paper has been particularly interesting to the country practitioner.

I want to ask Dr. Miller one or two questions. I had a case of angina pectoris a few weeks ago in a man who a few weeks preceding had been drinking heavily for some days. He was a man about 65 years of age. I was called

to see him when there were signs of impending death. I had nothing with me but morphia. His pulse was 50, regular, and not of high tension. But it was certainly a marked case of that character with all the symptoms pronounced. I gave him one-quarter grain of morphia, and with good results. Now, I would like to ask Dr. Miller in regard to the use of morphia in those cases. I would like the doctor to tell us something about the heart tablet so commonly used by dispensers of their own drugs, with the combination of digitalis, nitroglycerin, strophanthus, etc.

I have a case at present of mitral insufficiency in a young woman, twenty-four years of age, who had the lesion for some years previous to her marriage. She was placed in bed for some weeks on account of this mitral lesion, and at the present time is suffering from pelvic abscess. Two or three days ago her pulse rate was 140 and temperature varied from 102½ to 103. I would like to ask Dr. Miller as to the use of digitalis in a case of that character.

Dr. John F. Page, of Eureka:—Speaking of the unreliability of digitalis, I would like to say that while the ordinary preparations found in drug stores are generally inert, as has been stated, I have not found the preparations of Squibb's to be so. A few years ago I had the pleasure of making the acquaintance of the elder Squibb and a nobler man it has never been my lot to meet. It is possible, however, that his successors have not maintained the high standard that he established.

Dr. Miller (closing the discussion):—In reply to the question asked by Dr. Munson, I will say that tachycardia itself is not necessarily an indication for the giving of digitalis. Increased cardiac activity tires out the heart, and it may be followed by dilatation. In these cases of tachycardia digitalis may be indicated and may be of benefit in quieting down the heart and in rendering the systole and diastole more complete, actually lessening the amount of work which is done by the heart in a given period of time.

In regard to the heart tablet referred to by Dr. Munson, we believe that all of these group of remedies, such as strophanthus, digitalis, etc., have the same effect, but of this group digitalis is by far the best, and if we are sure we have a good preparation, it is the drug to use. In referring to the other members of the group, it would seem to me that the combination of strophanthus and digitalis is unnecessary. A discussion of combining nitroglycerin with digitalis would take us too far. It is enough to say, the predominating effect will depend upon the amount of the drugs given. Thus we get the effect of nitroglycerin immediately, passing of in one-quarter to one-half hour, in ten or fifteen minutes. After administered we get the effect of digitalis, which continues for hours. There is nothing rational in the administration of nitroglycerin and digitalis at the same time.

The use of morphin in angina pectoris is also an interesting question. We tried it experimentally on animals, knowing that morphin is used frequently in the treatment of angina pectoris, but our experiments on animals do not warrant us in drawing conclusions from them and transferring them to the human, inasmuch as we use morphin for the relief of pain. In animals anesthetized, there is no relief of pain by morphin. We found, however, that our animals died very promptly after ligation of the coronary vessels if they received morphin. Moderate doses of the drug hastened materially the death of the animals after obstruction of the coronary vessels.

In regard to Dr. Herrick's statement of the relief of angina pectoris by nitroglycerin, I wish to say that if we could get the opinions of all of the men here present as to the number of cases of angina pectoris which they have seen promptly relieved by the use of amyl nitrite or nitroglycerin, it would prove something. I have never seen a case of angina pectoris which received immediate relief from these agents. It is true, the pain in almost every case gradually subsides. We have the statement of Rhomberg who has had a very extensive experience. He says that in the height of an attack of angina pectoris nitroglycerin does not do much if any good, and he has only seen one patient who has

taken amyl nitrite during the height of an attack who was relieved. We have also a similar statement by Leyden, who has seen but one patient who experienced prompt relief from pain due to angina pectoris from the use of amyl nitrite.

Until 1884 angina pectoris was described and considered in books on the nervous symptom as a neurosis, and in its treatment nitroglycerin was recommended. Later we still hung on to our treatment by nitroglycerin, although the actual etiology of the disease was found to be different.

THE ENERGY VALUE OF FOODS.*

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I. ENERGY AND MATTER.

Life is a special and complex manifestation of energy or force. While we are not inclined to call in question or to debate the existence of manifestations of a strictly spirit life, wholly divorced from, if ever linked with, material or corporeal forms, it is still a patent fact that the life which it is our province to study and our duty to foster and protect is *intimately linked with matter*—it is a manifestation of the energy which resides in the matter. Just how energy and matter are associated is a problem with which the physicists are still struggling. A general idea of the relation may be gained by a few simple examples. Let one ignite a match. When the stick burns we see at first a simple oxidation of the paraffin with which the end of the match stick is saturated. This paraffin $C_nH_{2n}+_2$ requires two atoms of oxygen for each atom of carbon, and one atom of oxygen for each two atoms of hydrogen in its oxidation; $C_nH_{2n} + (3n+1)O = nCO_2+(n+1)H_2O$; in short, the paraffin oxidizes to carbon dioxid and water. As the wood burns we have also an oxidation of its elements: $(C_6H_{10}O_5 + 6O_2 = (6\ CO_2 + 5H_2O)_n$. Briefly stated, the oxidation of the wood yields carbon dioxid and water.

For the present discussion we are especially interested in the energy which is liberated in the form of heat and light as the complex paraffin or wood burns. We have found that if we wish heat we have only to oxidize paraffin or wood or coal or other complex carbonaceous substance to liberate a known, definite quantity of the energy required. While the carbonaceous matter oxidizes it changes its constitution—its molecular structure—from complex to simple; the paraffin candle, composed principally of hexadecane, $[CH_3.(CH_2)_{14}.CH_3]$ appears as $16CO_2+17H_2O$ after oxidation; while wood, even more complex in molecular structure, appears in the simple combustion products, CO_2 and H_2O. Whenever a highly organized, complex product, composed largely of carbon and hydrogen, is oxidized it breaks up into a large number of simple molecules, and in the breaking up liberates energy. This is a fundamental law of chemistry.

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The converse of this law is also true. Whenever simple compounds are built up into complex ones, energy is required to build up the combination, and this energy becomes latent in the complex molecule. For example, carbondioxid gas and water are taken up from the atmosphere and soil by green plants, and in the leaves of these green plants are combined to make dextrose ($C_6H_{12}O_6$). The energy which is required to make this combination comes from the sun. That accounts for the fact that the green plants require sunlight in order to build up new matter. From the dextrose thus formed in the leaves of green plants there is built up starch, cellulose, wood tissue, and fats. With the addition of certain nitrogenous substances, protoplasm is built up. While all this important constructive work is accomplished through the agency of living protoplasm, assisted by various enzymes, the energy involved all comes from outside sources, and is made latent in the complex structures built up by the protoplasm.

These complex structures thus built up by plants, namely, dextrose, starch, fat and protein, serve as foods for animals. Animals eating these substances, either directly or after partial intermediate elaboration on the part of other animals, assimilate them into their tissues, where they are oxidized and broken down into carbondioxid gas, water and other simple compounds. Thus we find in general: *plants build up and animals tear down matter.* Plants receive energy from without and make it latent in the substance which they build up. Animals use these substances for food, thus receiving the latent energy, which they release when they oxidize the substances.

II. THE CLASSIFICATION OF FOODS ON THE BASIS OF THEIR DIETETIC VALUES.

A food is an article of diet composed of one or more foodstuffs. A foodstuff is a chemical compound capable of nourishing the body. The body is nourished either by building up, or by repairing cell structure, or by furnishing the cell substance with materials whose oxidation may furnish energy for the life processes. It is understood that a substance, to be a real food, should not be injurious in its unoxidized condition. Fulfilling the requirements of this definition are several classes of chemical compounds. Water is a food, absolutely essential to all active living organisms. Certain mineral salts—sodium chlorid, sodium carbonate, sodium phosphate, calcium phosphate, and several others—are also foods and essential. While these inorganic foods are absolutely essential, they are usually received in sufficient quantities, incident to the choice of the organic foods and the usual beverages, so that it is seldom necessary to give any serious consideration to them in the dietary. Furthermore, for our present discussion they do not represent energy. Only the organic foodstuffs represent energy. The organic foodstuffs may be subdivided into two general classes: carbonaceous and nitrogenous.

The carbonaceous foodstuffs are the body fuels and are composed largely of carbon and hydrogen, and their oxidation yields carbon dioxid

gas and water only. The carbonaceous foodstuffs may be divided into two classes, namely, carbohydrates (sugars and starches) and fats. The *nitrogenous foodstuffs* are those which are essential in the growth and repair of the cellular structures of the body. No protoplasmic structure can be built up except through the use of the protein foods. While protein foods are all ultimately from vegetable substances, a considerable portion may be immediately from animal sources.

As stated above, foods are composed of one or more foodstuffs. Bread is a food composed of starch, small quantities of sugar and fat; and protein represented particularly by the glutin. Besides these organic foodstuffs, bread also includes various food-salts and a varying amount of water. In a similar way, milk is composed of protein (casein), carbohydrate (lactose) and fat (cream), together with various food-salts and water.

Organic foods are subject to classification on a dietetic basis into the following classes:

A. CARBONACEOUS FOODS.

This class includes all those foods in which the carbonaceous foodstuffs predominate and may be subsided into the following groups:

Group 1. Sugars and *Syrups,* of which common examples are cane sugar, and glucose, maple sugar and various syrups from these several sugars.

Group 2. Starches, represented in the markets by tapioca, sago and corn starch.

Group 2. Roots and *tubers,* represented in the market by white potatoes, sweet potatoes, parsnips, turnips, radishes, etc. All of this class are rich in salts, especially the salts of potassium. The nutrient portion of potatoes consists largely of starch, while in the other vegetables enumerated it consists chiefly of sugar.

Group 4. Green vegetables, including such market articles as celery, cabbage, cauliflower, spinach, asparagus, lettuce, etc. These green vegetables used mostly "in season" represent very little nutriment, but serve rather to sharpen the appetite for heavier foods.

Group 5. Fruits. While such preserved or dry fruits as raisins, figs, and dates represent a high percentage of sugar and, therefore, may afford an important source of energy, many of the fruits like the citrous fruits, currants, strawberries, peaches, pears and apples contain a very much smaller percentage of sugar and practically no other nutrient substances. These acid fruits, as they may be classified, are more important as adjuvants to the diet than as sources of energy, and their free use may be exceedingly important in regulating the bowels and kidneys.

Group 6. Fats and *Oils.* In this group we have the heat producers *par excellance.* So far as we know, their sole purpose in the body is to furnish energy, which they do in larger proportion than is the case with any other class of foods.

B. CARBONITROGENOUS FOODS.

These foods are so called because they contain too large a proportion of nitrogenous foodstuffs to be classified as carbonaceous and too large a proportion of carbonaceous foodstuffs to be classified as nitrogenous. In other words, they include groups of foods which might serve for the complete nourishment of an animal for a long period of time. These foods may be grouped under several heads.

Group 1. Cereals, including innumerable products from the following grains: wheat, corn, rice, oats, rye and barley. From these sources are formed various breads, biscuits and prepared foods, such as the cereal breakfast foods in endless variety, and are most important sources of energy because of their large proportion of starch and appreciable proportion of fats. They are also important body builders, because of their large proportion of proteins.

Group 2. Legumes, including beans and peas, which contain, besides a large amount of starch, so large a proportion of proteins that they may be used as one of the important dietetic sources of proteins, so important that they may frequently take the place of meat or eggs in the menu.

Group 3. Milk. Milk is Nature's food for young mammals. So important is this food that it is used practically universally in the dietaries of all the higher races of mankind. In this food more than any other food known to man the proteins, carbohydrates and fats are so balanced as to make a perfect food.

C. NITROGENOUS FOODS.

Group 1. Eggs. While milk is Nature's food for young mammals, eggs are Nature's food for young birds. However, carbohydrates are wholly lacking in eggs, and the fats are so much less in quantity than proteins that we are justified in classifying eggs as nitrogenous food. They make a most important source of proteins in the dietary, besides lending themselves to numerous preparations unmixed. Furthermore, eggs possess the rare advantage of lending themselves to innumerable combinations with other foods, with cereals, milk, fats, etc., etc.

Group 2. Meats. We generally rely upon the lean meat of animals for our supply of protein, though, as already stated above, a most important supplementary source for proteins must be recognized in eggs, legumes, milk and its products, and the cereals. So important are these sources of proteins that they may serve as the sole source, leaving out meat altogether. Such a diet is called "ovo-lacto-vegetarian."

The variety which is given by the addition of meats to the diet would justify it, however, even if there were no other reasons favorable to it. Liebig said: "It is certain that three men, one of whom has had a full meal of meat and bread, the second cheese or salt fish (and bread), and the third potatoes, regard a difficulty which presents itself from entirely different points of view." The aggressive peoples of northern Europe and the western continent are the meat-eating people of the world. Be-

sides overcoming the very great difficulties of a northern climate, they have outstripped their vegetarian competitors in almost every field of human endeavor. Just what gives to a meat diet this subtle influence is a problem. That the influence exists is not a matter of controversy. In its extremes we see the difference in meat and vegetable diet wrought upon the lion and the ox; the vegetarian, though strong, is slow, clumsy and lazy; the meat-eater quick, graceful and alert. The author does not wish to be understood to approve of an exclusively meat diet. Man is omnivorous. If meat makes too great a proportion of his diet, disturbances of nutrition are almost sure to manifest themselves. Generally speaking, Americans and Englishmen eat too much meat.

III. THE RELATION OF DIETETIC VALUES TO ENERGY OR HEAT VALUES.

As stated above, at the beginning of this article: first, life is a manifestation of energy; second, energy is intimately associated with matter; third, the matter which we take into the body as food is rich in latent energy; fourth, foods are chosen because of the energy or nourishment which they contain. If we accept these premises we are led unavoidably to the conclusion that *the organic foods possess a dietetic value in direct proportion to the latent energy which they represent.* This general principle requires some modification in its application to the nitrogenous foods, but holds absolutely for the carbonaceous foods.

When the engineer chooses fuel for his locomotive he reckons the value of that fuel as locomotive fuel on a basis directly proportional to the heat energy which is latent in it. In a similar way man, in his choice of body food, chooses at least his carbonaceous or his fuel foods on the basis of the heat energy which they represent. When we consider, however, the nitrogenous foods, we are compelled to modify this basis of calculation. The nitrogenous foods are used in the body for repair and for growth. Up to a certain minimum quantity they are of paramount importance. In fact, their importance is so great that it can not be measured in heat units, or in dollars and cents, because life depends upon the continuous ingestion of a certain quantity of these nitrogenous foods. While this quantity is not great, in fact, is very much smaller than it has been supposed until recently to be, still its importance is paramount. There is another reason why its dietetic importance is not measurable by its heat value, and that is that the body is unable to extract all the energy from the nitrogenous food. One gram, for example, of nitrogenous food, represents 5.75 calories per gram, dry weight, while the animal body is able to extract from this amount only 4.1 calories, thus leaving 1.65 calories in such nitrogenous compounds as urea, uric acid, xanthin bodies, etc.

Summarizing: *The relation of dietetic values to heat values is direct and mathematically proportional in all carbonaceous foods, and incidental and secondary in all nitrogenous foods.*

IV. METHOD OF DETERMINING ENERGY-VALUE OR CALORIES.

For a long period of time it has been customary to determine the latent energy in foods and fuels through the use of *the calorimeter.* Many forms of calorimeter have been devised, one of the more recent and valuable forms being that devised by Haldane and his associates and used in their extensive observations on foods. It consists of two chambers standing side by side, and provided with heavy non-conducting walls, within which there is a dead-air space. The dead-air space of one chamber is connected to the dead-air space of the other chamber through the medium of a mercury manometer. The rise of mercury in one limb of the manometer indicates a fall of the pressure, and, therefore, of the temperature, in the corresponding chamber. In one of the chambers the material to be tested, carefully weighed out and dried, is oxidized. In the other chamber a jet of hydrogen is oxidized. Care is taken, through either automatic thermostatic devices or by watching the manometer, to burn in the hydrogen chamber just so much of the hydrogen as is required to maintain the manometer at the zero point, that is, to maintain the same temperature in the two chambers. At the end of the observation one calculates the amount of the hydrogen consumed from the original amount minus what is left, and knows at once how many calories of heat have been liberated in the other chamber through the oxidation of the food or fuel therein. This method has been of the greatest commercial value in determining the fuel values of coal from various sources, and determining the food value of various foodstuffs.

The calorie is the amount of heat required to raise the temperature of one kilogram of water one degree Centigrade, or one pound of water 4° F.

V. HEAT VALUES OF VARIOUS CLASSES OF FOODS.

Applying the above described method to starch, we find that 1 gram of dry starch yields 4.18 calories of heat; a gram of cane sugar yields 4.176; a gram of dextrose, 3.94, and a gram of lactose, 4.16. Considering the preponderance given to starch and cane sugar in the diet, it is customary to allow for carbohydrates in general the heat equivalent of 4.18 or 4.2 calories per gram, dry weight.

As to the fats, it is found that a pure fat, like olive oil or lard, yields 9.68; fat tissue, like bacon or suet, yields 9.4; while butter yields 7.26. The preponderance of butter and tissue fat in the dietary leads most dieticians to use the factor 9.4 calories per gram.

As to the proteins, one gram of dry lean beef represents 5.65 calories; one gram of dry casein 5.85; a gram of vegetable protein, 5.5. Of this energy 1.65 calories per gram is unavailable to the animal body, leaving available 4.1 calories.

To determine the energy which any food represents, it is only necessary to find by analysis the amount of protein of fat and of carbohydrate which the food contains and to multiply these amounts by the heat equivalent as given above.

For example, oatmeal contains 7.6 per cent. of water, 15.1 per cent. of protein, 7.1 per cent. of fat, 68.2 per cent. of carbohydrate and 2 per cent. of salts. One hundred grams of oatmeal represent in energy:

From protein	$15.1 \times 4.1 = 61.91$
From fat	$7.1 \times 9.4 = 66.74$
From carbohydrate	$68.2 \times 4.18 = 285.07$
Total energy per 100 grams	413.72

Of very great practical value is a table showing the percentage composition of the more common foods. These analyses are published in government bulletins from the experiment stations and may be had for the asking:

COMPOSITION OF VARIOUS FOODS OF CLASSES A AND B.

Food.	Water. Per cent.	Proteins. Per cent.	Fats. Per cent.	Carbohydrates Per cent.	Salts. Per cent.	Energy in Kilo-Calories per lb.
Sugar	2.0	...	..	97.8	0.2	1,820 calories.
Syrup	43.7	...	..	55.0	2.3	1,023 calories.
Tapioca	...	...	..	...	...	....
Cornstarch	2.0	...	..	97.8	0.2	1,820 calories.
Rice	12.4	7.4	0.4	79.4	0.4	1,630 calories.
Macaroni	13.1	9.0	0.3	76.8	0.8	1,406 calories.
Flour	12.5	11.0	1.0	74.9	0.5	1,644 calories.
Cornmeal	15.0	9.2	3.8	70.6	1.4	1,645 calories.
Oatmeal	7.6	15.1	7.1	68.2	2.0	1,850 calories.
Beans or peas	12.6	23.1	2.0	59.2	3.1	1,615 calories.
Potatoes	78.9	2.1	0.1	17.9	1.0	375 calories
Onions	87.6	1.4	0.3	10.1	0.6	225 calories.
Cabbage	92.0	2.1	0.6	5.5	1.1	155 calories.

COMPOSITION OF BREADS AND CRACKERS (CARBO-NITROGENOUS).

Food.	Water. Per cent.	Nutrients. Per cent.	Proteins. Per cent.	Fats. Per cent.	Carbohydrates. Per cent.	Salts. Per cent.
Wheat bread	32.5	67.5	8.8	1.9	55.8	1.0
Graham bread	34.2	65.8	9.5	1.4	53.3	1.6
Rye bread	30.0	70.0	3.4	0.5	59.7	1.4
Soda crackers	8.0	92.0	10.3	9.4	70.5	1.8
Graham crackers	5.0	95.0	9.8	13.5	69.7	2.0
Oatmeal crackers	4.9	95.1	10.4	13.7	69.6	1.4
Oyster crackers	3.8	96.2	11.3	4.8	77.5	2.6
Graham bread nutrients.	...	100.0	14.8	22.2	83.7	To compare the nutrients of Graham bread with a typical diet.
Typical diet nutrient.	...	100.0	17.5	8.4	73.8	

COMPOSITION OF MILK AND ITS MORE IMPORTANT PRODUCTS.

Food.	Water. Per cent.	Proteins. Per cent.	Fats. Per cent.	Sugar. Per cent.	Salts Per cent.	Analyst. Per cent.
Milk	86.8	4.0	3.7	4.8	0.7	Parkes
Skimmed milk	88.0	4.0	1.8	5.4	0.8	Parkes
Cream	66.0	2.7	26.7	2.8	1.8	Parkes
Cheese	36.8	33.5	24.3	..	5.4	Parkes
Butter	6.0	0.3	91.0	..	2.7	Parkes

The composition of some of the more common meats (including fish and "shell-fish"):

Food.	Water.	Proteins.	Fat.	Carbohydrates.	Salts.
Beefsteak	74.4	20.5	3.5	....	1.6
Fat beef	51	14.8	29.8	....	4.4
Lean beef	72	19.3	3.6	....	5.1
Fat mutton	53	12.4	31.1	....	3.5
Lean mutton	72	18.3	4.9	....	4.8
Veal	63	16.5	15.8	....	4.7
Fat pork	39	9.8	48.9	....	2.9
Bacon	15	8.8	73.3	....	2.9
Smoked ham	27.0	34.0	36.0	....	10.0
Calves' liver	72.3	20.1	5.6	....	1.5
Poultry	74.	21.	3.8	....	1.2
Whitefish	78.	18.	2.9	....	1.
Canned salmon	63.6	21.6	13.4	....	1.4
Crabs	84.	15.	1.0	....	2.
Oysters	87.	6.	1.2	3.7	2.

The energy value of foods may be calculated from their percentage composition. The calculated values should be tabulated for reference. From the percentage composition determine the calories in 100 grams, as illustrated above for oatmeal.

To find the calories in one ounce avoirdupois multiply the total calories in 100 grams by .284.

To find the calories in one pound multiply the number per ounce by 16. Having thus calculated the calories, drop all decimals, as these are within the natural errors of the weighing.

THE ENERGY VALUES OF SOME COMMON FOODS.

The Food.	Calories per 100 grams.	Calories per Ounce.	Calories per Pound.
Wheat bread	286	80	1,280
Oatmeal	414	117	1,880
Cornmeal	367	103	1,648
Beans or peas	358	100	1,600
Potatoes	84	24	382
Milk	57	18 (½ fl.)	(pt.) 288
One egg	73	...	....
Beefsteak	115	32	512
Bacon	434	123	1,973

DISCUSSION ON THE PAPER OF DR. HALL.

Dr. H. I. McNeill, of Newman:—I think we are very apt to neglect papers on the scientific side of medicine, and I feel that I appreciate the value of this department as I did not when I was a student, because so often the general practitioner is asked as to the value of different foods, and it is then he recalls his physiology; it is then he must go back to student days and consider what we were taught at that time. This is a part of the practice of medicine in which we are seriously ignorant, and we must have our attention called to this subject by such scientific papers as this, before we can appreciate its full value, and we must depend upon scientists or physicians who are working in the laboratories to set forth this part of medicine. We must turn our attention to them for help because the general practitioner has no opportunity for experimental work and to demonstrate the values of foods. I appreciate this paper very much because of its practical value to the general practitioner.

Dr. Thomas Grant Allen, of Chicago:—I think most of us would like to have had Dr. Hall devote a little more time to the energy side of food values. We are indebted to him for calling our attention so specifically and clearly to the absolute dependence of energy on food, and, furthermore, to the admirable illustration he gave of the complexity of food and the simplicity of the end products of digestion and metabolism.

A few years ago, at the suggestion of Dr. Babcock, I made a study of food values, and the thing that most completely attracted my attention then, and has been of great value to me ever since, was the fact that foods are just two things—energy and proteid—and that accordingly its main functions are the production of heat and energy and the building and repair of tissue. Without the proteid we can not have a drop of digestion secretion or of any secretion for that matter. We can not add an ounce of muscle or a single living cell. The proteid is the first and by far the most important part of our food. The fats and carbohydrates and all the rest we may consider an energy. That has been of the greatest value to me in infant feeding. Infant feeding, until the present time I may say, has very largely been a confusion of the percentages of fats, proteids, sugar, and what not. But it is beginning to get clear in the minds of most pediatricians of to-day that food is proteid and energy. In the feeding of adults we have had for years certain accepted standards for the amount of daily energy and proteid the food should supply, but no such standards for infants until recently, Heubner only a few years ago having established a standard for the energy not to exceed 45 calories per pound per day, while last year I attempted to establish a proteid standard for babies, placing it at four to six hundredths of an ounce per pound.

Chittenden, who was referred to by Dr. Hall, has caused us to revise our ideas as to the amount of proteid required for an adult. Voit, whose standard has been followed for years, recommended about four ounces of proteid per day for an average man at moderate muscular work. Chittenden says we can get along with 60 grams or two ounces, and I think his experimental work has been very convincing.

I wish to call attention first, to the fact that we probably have been feeding adults too much proteid and infants too little and that the tendency to-day is to lessen this daily amount for the adult and increase the amount for the infant, and second, to the seeming disproportion between the standards for infants and adults. The standard for adults has been about 22 calories of energy per pound, and about .026 ounce of proteid per pound. Chittenden would reduce this proteid to about .013 ounces per pound. This is less than half that required for an infant, but it is right, since the baby has proportionally less surface from which heat radiates and its metabolic activities are greater. It requires proportionally more proteid because it is rapidly taking on new tissue while the adult has to rehabilitate his.

In the classification of force-furnishing foods, Professor Hall has omitted alcohol. A few years ago Dr. Stewart, Professor of Anatomy in Bellevue Medical College, had typhoid fever. While it was at its height he consumed immense quantities of whiskey, apparently with marked benefit. I believe in certain infectious diseases like this a moderate high temperature controls germ production, and have no doubt in cases like this heat was derived from the alcohol, which otherwise would have been obtained at the expense of the body. I understand this is a favorite subject with the Professor, and do not think it should be omitted from the force furnishing stuffs.

Dr. Thomas M. Aderhold, of Ziegler:—I got one practical point from this paper, especially in treating patients whose finances are in a low condition. They often ask us regarding their diet, most of them being laboring people, and it is of great value to us to be able to know what we can tell them in order to

reduce the amount of meat which they eat, which is an expensive food, and increase the amount of corn products and wheat which are highly nutritious in producing that form of energy which they need. Many of them eat more meat than their excretory organs can properly eliminate, and by regulating their diet, in this way we can lessen the expense to them. Especially is this the case where we add to the meat an excess or a moderate amount of alcohol. By advising them to omit alcohol and urging them to eat more corn products and wheat, we will get much better results.

Dr. J. M. G. Carter, of Chicago:—I want to call attention to one point which Dr. Hall mentioned and which is of special interest to me, namely, the amount of proteid required for holding the human body in good condition. As he said, we have been told in the past that we should have at least a minimum of 150 grams of proteids, while it has been lately thought that 60 grams, according to the experiments that have been made, are quite sufficient. Along that line I want to mention some observations that I have made during the past year and which have been very interesting to me. Several rather fleshy men, some of whom were rheumatic or thought they had rheumatism, as they had pains and aches affecting them occasionally, had spoken to me in regard to the matter and I have told them that if they would adopt the habit I did of not eating too much meat it might be a good thing for them. They were probably eating too much meat or too much food of that character, and I suggested that they omit meat food at noon; that they take only two meals a day, breakfast and dinner. This is the particular point I wish to call attention to. Those gentlemen who have adopted that plan, who are above par as regards weight, have been free from their rheumatic pains and aches. They feel better, have reduced their weight very little, but have been in a very much better condition for work.

Dr. Thomas W. Bath, of Bloomington: With reference to the practical application of these foods in relation to how much energy they can give an individual in his work, I will say that the American people earn more money than any other people on earth, and consequently a larger number of them eat more porterhouse steaks than any other people, and we are living under a great deal of delusion as to food values.

About fourteen years ago the *Chicago Tribune* came out with a sort of a ridiculous editorial prior to the China-Japanese war. It made certain predictions as to the outcome of this war. Reference was made to the Chinese and Japanese as rice-eating people, and the preponderance of evidence seemed to point to the fact that the Chinese would wallop the Japanese in time. But the trend of the article was to ridicule the prowess of a rice-eating people. I have been to Japan three or four times and have seen what the Japanese can do. Having served as army surgeon for three years, I had an opportunity to see the relative value of those who subsisted on a vegetable diet, and those of our own fellows who partook largely of a meat diet. We know that peas and beans contain about 22 per cent. proteid matter, while meat, such as beefsteak, contains about 26 per cent. It has recently been said by the Chinese minister in this country, having subsisted on a strictly vegetable diet for so many years, they were enabled thereby to rid themselves of divers diseases to which human flesh is heir, such as a uric diathesis, gout, rheumatism, etc.

Now, I am of the opinion that as this country grows older, physiologists will see need for application of practical conditions. For instance, instead of consuming nearly all the products of our plains in the shape of great herds of cattle and hogs, we will direct our attention to the energy in the proteids of other articles of food. For instance, what can corn-bread do for one? What can wheat bread do for one, and how much energy can we get out of it by eating two meals a day? The majority of us eat too much. According to our financial

condition, we may eat ham and eggs for breakfast, a porterhouse or loin steak for the noon meal, and then a piece of bacon or some boiled or poached eggs for supper, or a piece of roast beef. When we eat three or four such meals a day we get morose. We find the urine contains xanthin, kreatinin, and uric acid crystals. The tongue is coated, and the individual gets up in the morning with a nut brown taste in his mouth, and he feels somehow as if things are not just as they should be. In short, we eat too much.

Dr. Hall (closing the discussion):—I want to pay a tribute to Dr. Allen by saying what he wanted to say if he had had time. He was bringing out a very important point regarding protein in infant feeding. I happen to know what Dr. Allen's theory is. It is in harmony with the biology of the infant. The infant is an animal, and we have to view it as an animal, before we know how to feed it properly. It is not a question of sympathy, but what the infant needs in order to build up its tissues, and it must have protein for this purpose. While its activities require a smaller proportion of protein to be used as *repair* substance, it has an incomparably greater proportion in requisition for *building up new tissue*. It is building up new tissue at the rate of from half a pound to a pound a week during a number of months of its earlier life, and it must have protein for that purpose. That is what Dr. Allen intended to bring out.

As to the force or energy of alcohol as a food, I think it must be clear to those present why I should leave out of discussion the mooted question of alcohol. Two sides of the question have been presented this afternoon, each side having been very forcibly presented, one man saying that "a physician who had typhoid took alcohol at the height of the fever. It made him feel fine, and he got along nicely." The other stated that he, in his practice, uniformly advises his patients or constituents not to use alcohol. Why? He knows that the miners in one of the mining districts of the State use alcohol freely, and that one of his functions is to urge these people to use less alcohol, and he tells them why. His experience has been that in proportion to the smaller use of alcohol does their health improve, and likewise in proportion to the smaller use of meat their health improves, so that he urges a more abstemious use of meat and alcohol. Do you wonder, then, I did not, owing to the short time at my disposal, plunge into this mooted question of alcohol?

So far as my theories and beliefs are concerned, based on physiological grounds, I do not look upon alcohol as a food. Alcohol is oxidized in the body, and I do not say alcohol can not be used therapeutically in certain fever cases with satisfactory results, but for the well man, I certainly should not include alcohol in his list of foods to use as a regular part of his diet. The most exhaustive list of foods ever published in this country was published under the supervision of W. O. Atwater in his work for the Government Experiment Stations, and *alcohol does not appear in his list of foods.*

Two or three of the speakers have reinforced my position as to the strong advisability of a decrease in protein diet. In other words, in plain every-day language, Americans are eating too much meat. The reason has been graphically set forth by a previous speaker when he said they eat too much meat because meat is so plentiful in this country. It is a rich man's country, and the overthrow of meat as a steady diet is a blessing to mankind the world over. The reason the Japanese do not eat meat is because they can not afford it. I do not know that meat will be so expensive in this country as to preclude its use as a staple diet, but from a strictly hygienic standpoint, it would be better for Americans if it were. We are eating too much meat. It is one of the most precious foodstuffs we have, but like all other precious things there is a limit to the amount of it to be taken, and when you reach that limit, then stop. It is one of those articles of food that is invaluable up to the point where you get the nitrogenous equilibrium, and when you pass that point, the quicker you stop the better it is for the hygiene of the individual.

Symposium—Multiple Sclerosis.

THE ETIOLOGY AND PATHOLOGY OF MULTIPLE SCLEROSIS; WITH REPORT OF TWO CASES WITH AUTOPSY.*

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CHICAGO.

HISTORICAL.

In Cruveilhier's Atlas, published in 1835 to 1842, the first clinical and anatomical description of this disease is given. This author distinguishes between two kinds of cord degeneration, one involving the whole length of the tracts, the other occurring in "islands." Frerichs, in 1849, was the first to write a collective article and to make the clinical diagnosis of "insular" sclerosis. In 1856 Valentiner collected all the known cases to the number of fifteen and tried to define the clinical pic-

Fig. 1.—Case 1. Horizontal section through optic chiasm. (From Weigert-Pal specimen.)

ture, but failed to mention the cardinal symptoms. This was first done ten years later by Charcot, who also was the first to recognize the salient morphological feature, the persistence of the axones in the sclerotic patches while the myelin sheaths are destroyed. Since the time of Charcot, Oppenheim, Uhthoff and Strümpell have been prominent among those who have added to their knowledge of this disease. The researches of Bielschowsky with his new impregnation method for the demonstration of neurofibrillæ have advanced our knowledge of the finer histology and fully confirmed the correctness of Charcot's observation of the persistence of the axones.

FREQUENCY.

It is peculiarly difficult to estimate the frequency of a disease in which the diagnosis offers so many difficulties. It is, perhaps, safe to say that it is much more frequent than commonly supposed and that the

* Read at joint meeting of the Chicago Medical and Chicago Neurological Societies, April 1, 1908.

apparently much greater frequency of the disease in Europe, particularly in Germany, is not real. The statement of Müller is of great interest, that at the Erlangen clinic, the material of which largely comes from

Fig. 2.—Case 1. Pons, upper portion. (From Weigert-Pal specimen.)

Fig. 3.—Case 1. Pons, lower portion. (From Weigert-Pal specimen).

the rural population, the number of cases of multiple sclerosis exceeds that of cerebrospinal syphilis and that of syringomyelia and approaches that of tabes.

ETIOLOGY.

The onset in over 40 per cent. of the cases is between the ages of 20 and 30 years, and in 75 per cent. between 20 and 40. The disease is rare in childhood and old age. The sexes are probably about equally affected, although on adding up various statistics covering 893 cases we find that 530 were in men and 363 in women, but the statistics of individual observers vary greatly, chiefly in proportion to the relative accommodation for the sexes at the institutions at which the cases were observed. Thus Charcot naturally saw more cases in women, as his work

Fig. 4.—Case 1. Bulb. (From Weigert-Pal specimen.)

was largely done at the Salpêtrière, an infirmary for women. Little is known of the causes of the disease except in a negative way. The factors which may be called the "big three" in the causation of nervous diseases, namely, heredity, syphilis and alcoholism, are of no importance. Some authorities, chiefly Marie, believe that the disease is often due to preceding infectious diseases, such as typhoid fever and smallpox, but no satisfactory proof has been offered. In the seventy-five cases on which Eduard Müller's monograph is based, an infectious disease within a few

months of the onset has been present in only four. Oppenheim, with material chiefly from a large city, lays stress on metallic intoxications, and others have mentioned trauma and exposure to cold and wet. Strümpell and his pupil, Eduard Müller, deny the existence of external causes and claim that the disease is analogous to Friedreich's ataxia and syringomyelia in being due to developmental causes. The rarity of two or more cases in one family and the rarity of demonstrable congenital anomalies are unfavorable to this so-called endogenous theory. In short, we know nothing of the actual causes of the disease.

Fig. 5.—Case 1. Third cervical segment of cord. (From Weigert-Pal specimen.)

MORBID ANATOMY.

The morbid anatomy, on the other hand, is well worked out and presents sufficient features so strikingly characteristic of the disease as to secure its place as a morbid entity in spite of its unknown etiology and

Fig. 6.—Case 1. Sixth cervical segment of cord. (From Weigert-Pal specimen.)

variable clinical features. There is extensive dissemination of sclerotic patches varying from microscopic size to one sufficient to include the whole width of the bulb or cord, in the cord and brain, often also in the optic nerves, which really are projections of the brain and unlike the other peripheral nerves in their structure, and sometimes in the spinal roots, but never in the true peripheral nerves in which there is no neu-

roglia and where the fibers have a neurilemma outside their myelin sheaths. The nodules are grayish and firmer than the surrounding tissue. They may occur anywhere in the central nervous system, but are found most frequently in the white matter of the cord, in the pyramids

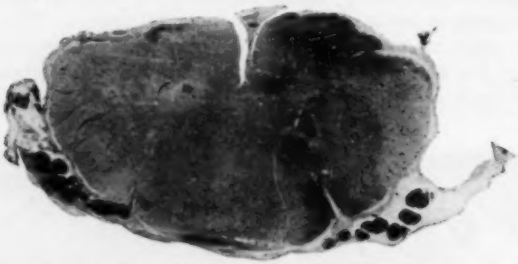

Fig. 7.—Case 1. Thoracic region of cord. (From Weigert-Pal specimen.)

and olives of the bulb, in the anterior part of the pons, in the centrum ovale, in the walls of the lateral ventricles, in the corpus callosum and in the optic chiasm. Although entire tracts may be interrupted by a

Fig. 8.—Case 2. Bulb. (From Weigert-Pal specimen.)

lesion, little or no secondary degeneration takes place, a unique feature peculiar to this disease. The explanation of this is found on more minute study of the lesions and was first discovered by Charcot. In the lesions

the myelin sheaths are destroyed and the glia is increased, but the true nerve elements, the axones and ganglion cells, largely persist, and thus the passage of impulses through the patches is possible. This feature, which is peculiar to multiple sclerosis, accounts for the absence of ascending and descending degeneration in tracts apparently interrupted by sclerotic patches and also accounts for the frequent disproportion between the extensive organic lesions and the variable and often largely subjective symptoms which frequently lead to a faulty diagnosis of hysteria or other functional disease.

PATHOGENESIS.

The pathogenesis, like the etiology, is poorly understood and there are many conflicting views. All agree that in the patches the myelin

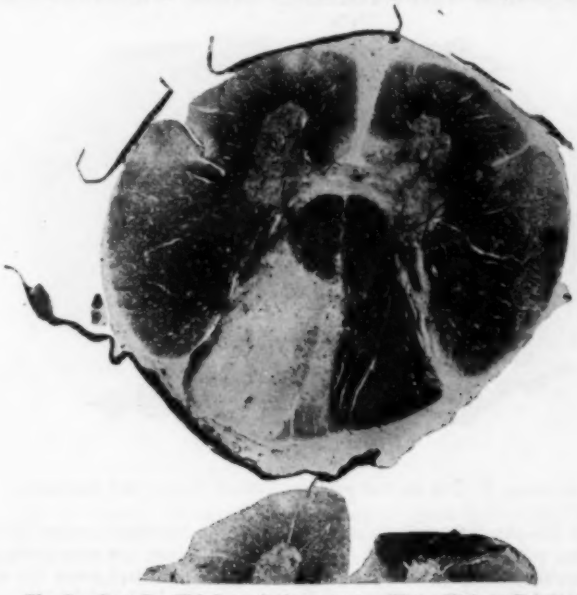

Fig. 9.—Case 2. Third cervical segment. (From Weigert-Pal specimen.)

sheaths degenerate and the glia is increased, but opinions differ as to which change is primary. In addition to the theory of primary myelin sheath destruction and that of primary glia increase, a vascular theory has been advanced, as in some cases changes in the blood-vessel walls and dilatation of lymph channels have been observed. It is rare to find signs of inflammation, such as round-cell accumulations about the vessels and changes in the meninges, and it is very rare to find any changes on cytological examination of the cerebrospinal fluid.

CASE 1.—The brain and cord of this case were sent to the Pathological Laboratory of Rush Medical College by Dr. J. D. Madison of Milwaukee. I am also indebted to Dr. Madison for the following clinical notes. The patient was a white, married woman, twenty-four years old. She had one child at twenty-one.

Her mother and a sister died of tuberculosis. At the age of four years she fell and injured the head in the occipital region. She had been cross and irritable since childhood and had been subject to violent fits of anger. The last illness began about four years before death with unsteadiness and staggering, which persisted. In the beginning of the illness there was temporary paresis of the right leg. About half a year later, in the beginning of her pregnancy, the right leg again became weak and some months later the left leg also became involved and both legs remained greatly disabled. There was little headache but dizziness was a prominent symptom from the onset. Nystagmus was present during the last three years before death. She also complained of occasional nausea and numbness and formication in the right leg. There was also considerable dull, aching pain, chiefly in the right leg. There was difficulty in swallowing during the last six months.

Examination: Very irritable and emotional but intellect intact. Distinct nystagmus. Some irregularity of the pupils which react to light and in accommodation. No paralysis of the external ocular muscles. Vision much impaired.

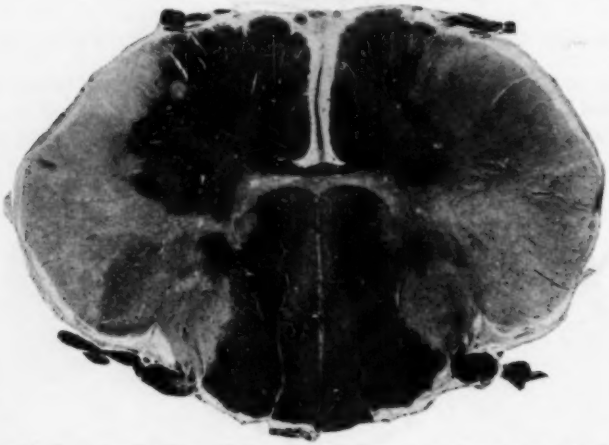

Fig. 10.—Case 2, Fifth cervical segment. (From Weigert-Pal specimen.)

Distinct optic atrophy. Scanning speech and marked intention tremor in both arms. Patellar reflexes exaggerated. The lower extremities are very weak and rigid. No muscular atrophy. Touch and pain sensation impaired below the right knee. The patient died of pneumonia and the autopsy was held twenty-four hours after death. Only the brain and cord were received for examination. The distribution of the lesions is seen in the illustrations, all of which are reproductions of Weigert-Pal specimens. The great extent of degeneration in the optic chiasm and optic nerve is particularly noteworthy. In the pons, bulb and cord the usual irregular distribution prevails. The roots are nowhere involved. A few macroscopic foci also exist in the brain. Microscopic examination of one of these located beneath the floor of the descending horn of the lateral ventricle shows it to be of this nature.

Case 2.—The patient was a single woman, 22 years old, and was admitted to the service of Dr. Billings in the Presbyterian Hospital on March 8, 1903. The hospital record is as follows: Family history negative. Previous diseases: She has had the usual diseases of childhood and what was termed 'walking typhoid' immediately before the onset of the present illness. She has generally been strong and healthy. She finished high school in June, 1899, having attended school continuously, with the exception of summer vacations, for eleven years.

The work of the last two years was particularly hard and she had to study until midnight at least five days a week. She thought only of school and took little exercise and toward the close of her work felt very tired and worried. Her habits have always been regular and no history of venereal infection is obtainable. The menstruation began at fourteen years of age and has always been very irregular, two or three months frequently elapsing between periods. The menstruation has always been free from pain and constitutional disturbance, has not lasted over four days and the quantity has usually been scanty. The last menstrual period was in July, 1902.

The present illness began in October, 1899, with a sudden, complete left-sided facial paralysis. She awoke one morning and was unable to raise the upper lid or wrinkle the forehead on that side. The face felt cramped, stiff and numb on the left side. The paralysis lasted three weeks and disappeared gradually without treatment. In January, 1900, there was a similar attack of left-sided facial paralysis lasting six weeks. Immediately following this she noticed dimness of vision with staggering from side to side in walking, due, she says, to weakness

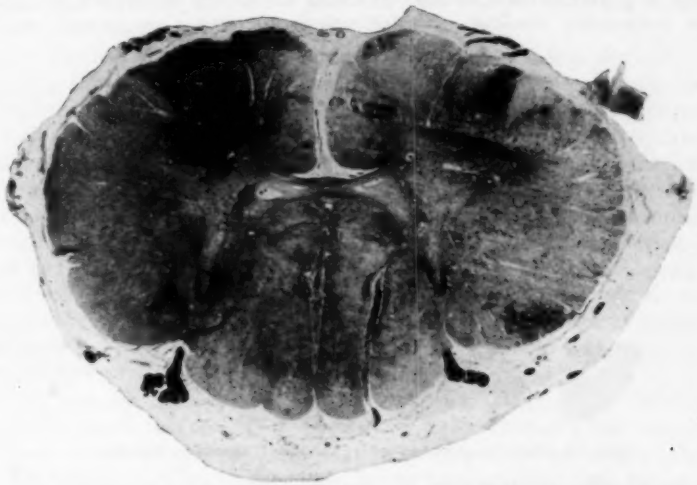

Fig. 11.—Case 2. Seventh cervical segment. (From Weigert-Pal specimen.)

of the limbs and a constant sense of falling forward. The lower extremities soon began to feel numb, heavy and stiff and later similar sensations appeared in the arms. They gradually grew worse but varied in intensity from time to time. She has not walked since June, 1902, and says her condition is worse at present than ever before. Within the past three weeks vision has failed greatly so reading now is impossible. She says that formerly while reading sometimes simple words would convey no meaning to her. She has never had difficulty in expressing her thoughts, but thinks her memory has failed greatly. She does not complain of any disturbance of the special senses other than vision. Occasionally severe frontal headache is present. The chief complaints are as follows: Weakness and numbness of upper and lower extremities; constant flexion of the knees with inability to extend the legs, and involuntary spasmodic contraction of the flexor muscles of the legs; occasional cramp-like pain in the calves of the legs and tingling in the soles of the feet. Complete loss of control of both bladder and rectum; impaired vision; sense of constriction about the lower portion of the chest; amenorrhea.

Physical examination: The patient is a well-developed, fairly well nourished young woman who is unable to sit up in bed without assistance. The muscles

are flabby but there is no localized atrophy. The skin is warm and moist and of slightly anemic appearance. The pupils react normally and are slightly unequal, the left being wider. There is slight weakness of the left internal rectus, the conjunctivæ are anesthetic, and there is slight nystagmus when the eyes are turned sharply to the left or upward. Ophthalmoscopic examination by Dr. Hotz revealed marked optic atrophy, most advanced in the right eye. The tongue is of normal appearance, is protruded in the median line and free from tremor. The pharyngeal reflex is absent. Examination of the ears is negative. There is slight scoliosis in the lower thoracic and lumbar region with convexity to the right. Examination of lungs and heart is negative, except for slight accentuation of the aortic second sound. Abdominal and pelvic examination negative. Marked intention tremors in both arms, greater on the right side. Muscular, touch, pain and temperature senses are apparently retarded in the upper extremities and the stereognostic sense is disturbed, as she is unable to distinguish differences in the size of coins, etc. The elbow and wrist jerks are not obtainable. The lower extremities are very spastic and there is constant slight flexion at the knee and hip which is greater on the right side. The limbs can be fully flexed but only slowly and incompletely extended. Patellar reflexes are greatly exaggerated, ankle-

Fig. 12.—Case 2. Lumbar cord. (From Weigert-Pal specimen.)

clonus and Babinski reflex are present on both sides. Sensation, particularly for heat and cold, is retarded, especially in the left leg. Sensation on the trunk is normal, with the exception that about the lower portion of the chest corresponding to the location of the sense of constriction complained of there is an ill-defined band in which the temperature sense is disturbed. Hearing, smell and taste are normal.

The spasticity in the lower extremities increased during her stay in the hospital, the flexor contracture became more marked, and the band of constriction about the chest slowly moved upward to the level of the junction of the third rib with the sternum. Urinalysis negative, except for the presence of numerous leucocytes. Blood examination on March 11, 1903, showed hemoglobin 90 per cent., red corpuscles 4,680,000, white corpuscles 8,200. The patient was discharged April 12, 1903, and a couple of weeks later was taken to another hospital, where on April 28, the uterus was curetted and the legs were straightened and put in casts. She deevloped a septic fever and was delirious for a month before death, which occurred on July 29, 1903. The autopsy was held on the day after death by Dr. H. Gideon Wells, who made the following anatomical diagnosis: Bilateral fibrous pleuritis; sloughing bed sores over sacrum and buttocks; edema of the lungs; bronchial atelectasis; parenchymatous degeneration of the kidneys; fatty changes in the liver, kidneys and myocardium; endometritis; follicular enteritis;

bilateral fibrous perioophoritis; contractures of the lower extremities. The brain and cord were removed and placed in 10 per cent. formalin for future sectioning. Bacteriological examination: Cultures from the heart's blood, spleen and lung were sterile. From the liver the bacillus coli communis was obtained. The brain and cord were given to Dr. T. Rothstein of the University of Chicago for examination and he kindly gave me pieces of the bulb and cord from which my specimens were taken. The distribution of the lesions as seen from the accompanying illustrations is as irregular as in Case 1. Doctor Rothstein informs me that there are no visible lesions in the brain and that the optic nerves are normal on histological examination. The chiasm and tracts have not yet been examined.

SIGNS AND SYMPTOMS OF MULTIPLE SCLEROSIS.*

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In the last few years the personal and impressionistic method of studying the exceedingly rich symptomatology of multiple sclerosis has given way to exact research on large numbers of cases. As a consequence it seems that most of our text-books will have to submit the sections dealing with this subject to some measure of revision. The work has been almost all done in Europe, because of the considerably greater frequency there of this disease. How much more often multiple sclerosis occurs in Europe than in America has been a subject of contention—even some of our own compatriots accusing us of not knowing the symptomatology sufficiently well to make a diagnosis in the cases that do not present the classical symptoms described by Charcot. But it is certain that men in America of even the largest experience have seen but comparatively few cases and regard it as a very rare disease. Starr, Jelliffe and Collins, for instance, give figures indicating the frequency of multiple sclerosis in this country as one-quarter to one-half of 1 per cent. of all cases of nervous disease. Starr found only twenty-seven cases among 10,000 patients coming to the clinic for nervous troubles. My own figures agree substantially with this. Among the last 1,500 cases of nervous disease which have been studied at the Chicago Policlinic, all during a period subsequent to active discussion of the symptomatology of multiple sclerosis and when consequently we have been particularly alive to its possible presence, there have been only 7 cases, or 0.5 per cent. On the other hand, Bramwell, who has studied this matter carefully for Great Britain, says that there 1.7 per cent. of the cases of nervous disease are multiple sclerosis, while Redlich of Vienna says that it is one of the most common affections of the nervous system in Austria, and Müller, Morawitz and others unite in stating that in the rural districts of Germany it is by considerable the most common organic nervous disease to be met with.

The symptoms of multiple sclerosis are so numerous and their incidence and progress so various that for systematically studying them to

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any practical end a particular point of view must be adopted. I conceive the comparative frequency-values of symptoms based, first, upon early appearance and, second, upon relative frequency at any stage, to be the best way of looking at this subject. The justification of this, as well as of the worth of the newer statistics, appears at once when we realize that the classical triad of Charcot upon which we have so long relied—viz., nystagmus, scanning speech and intention tremor—probably does not appear complete in even a majority of the cases as seen at any stage (Müller found it complete in only 15 per cent. of diagnosable cases in Strümpell's clinic) and that, as a rule, none of these three signs is apparent at the early period at which, naturally, we desire to make a diagnosis.

First, as to the initial complaint of the patient; why is the doctor originally consulted? Mackintosh and Curschmann have endeavored statistically to clear up this point. Most commonly, it seems, some motor disturbance is complained of, either gradually or, more rarely, suddenly coming on. It is uncommon to have any real paralysis, but the trouble is rather in the nature of slowness, weakness, clumsiness or stiffness of movement, affecting particularly the legs and less often the arms. All movements are possible, but they are limited in energy and endurance. According to von Leyden and Witlich, if you test such a person you find that he can not repeat his movements as quickly as he normally should, while difficult movements, such as abduction and adduction of a single finger, are hardly possible. The unskillfulness of movement is further added to by the abnormal occurrence of associated movements, e. g., if one finger moves, the others do also. Rodhe and Müller have drawn attention to this early weakness expressed as a very localized feeling of tiredness. All these motor symptoms may remain stationary, may gradually increase or may be fleeting in character.

Perhaps the next most frequent early complaint is in connection with the eye and consists usually in disturbances of vision with often some abnormality of the optic disc. These troubles may precede by years the development of such other symptoms as are noticed by the patient. Abnormal action of the eyelid and of the external musculature of the eye may also occur, giving an ephemeral ptosis or diplopia. Most often a fleeting abducens paralysis is seen, sometimes combined with a similar facial nerve affection. Practically the only early pupillary sign is a difference of size in the two eyes. But I shall not dwell on these points, because this subject is to be dealt with this evening from the ophthalmological standpoint, and, indeed, these patients frequently consult their oculist first.

Subjective disturbance of sensation is about on a par with the eye troubles as an early symptom. The commonest complaint by far is of feelings of numbness or of tingling in the ends of the extremities or, rarer, in other places. Pain is less often complained of, but occurs particularly in the legs; it may, however, also appear in the arms, in the joints, or as intercostal or trifacial neuralgia. The latter was seen in a case with an area of sclerosis at the point of exit of the fifth cranial

nerve. Pain, however, is very rarely a prominent symptom at any stage, because of its lack of severity and continuity. A few cases have complained early of a sensation as if a girdle or cord was constricting the trunk, similar to the spinal root symptom in tabes. Attacks of unsteadiness of gait or of shaking in the arms is the initial symptom next in order of frequency. The hands are affected in that the formerly well-coordinated movements are not now performed safely. The trouble is, for the most part, of the nature of ataxia. Only extremely rarely is there anything approaching tremor at this stage.

Abnormal action of the sphincters is by no means an uncommon early symptom. The difficulty is usually with the bladder and may take the form of retention, of precipitate micturition or of slight incontinence, and these disturbances may be evanescent or may change one into another. Much more unusual is rectal incontinence and yet, as in one of my own cases, periodical appearances of this disorder may precede the development of other symptoms by several years.

Well-defined vertiginous attacks appear very early in a small number of cases, but in the first stage this symptom shows nothing like the frequency it later assumes. Apoplectiform or epileptiform attacks are made much of in the text-books, but Mackintosh found such attacks to be the initial symptom in only 4 out of 110 cases. Sudden unconsciousness is followed by hemiplegia or hemiparesis from which there is generally recovery in a few hours or days. The attack is said to be accompanied by fever. There also may be seizures simulating minor epilepsy. A temporary speech defect is occasionally noticed first. This is not scanning speech. Curschmann says the disturbance amounts to a subjective feeling of hesitation in pronouncing certain consonants, or else a well-marked monotone is assumed with imperfect use of the singing voice.

An initial facial paralysis coming and going in attacks has been reported in two cases by Berger, and Dr. Bassoe has just told you of another. Headache is seldom reported early. Compulsive laughter, a peculiar phenomenon, the nature of which we shall go into later, on account of its very occasional early appearance, is to be reckoned as one of the symptoms belonging to the first stage.

In search for first signs of multiple sclerosis, much has lately been made of the early loss of the abdominal reflex. Oppenheim, in the last edition of his text-book, seems inclined to discount its value because of the alleged occasional absence of this reflex in healthy people. His remarks stimulated Müller and Seidelmann to further extensive research, and they have established the fact that this reflex in adults under 50 is practically always obtainable unless there is abdominal or nervous disease present. Of course, the correct technic must be employed. On the other hand, Müller contends and several other authors agree that in the initial stadium of multiple sclerosis the great majority of cases show abnormality of this reflex. The bilateral failure is, of course, most valuable, but mere diminution or the unilateral absence of the reflex is of some import. The cremasteric reflex also, as we might by analogy

expect, has the same strong tendency to early disappearance in multiple sclerosis. The knee jerk and Achilles jerk are both usually early exaggerated, and sometimes the Babinski phenomenon may be obtained before any discoverable spasticity or paresis has set in.

The course of the evolution of the symptoms of multiple sclerosis is in its uncertainty quite characteristic. They may arise gradually and develop to a certain extent and then get gradually better. Or they may come on suddenly, last for an indefinite time and disappear as suddenly, only to return again. Remissions are more or less characteristic of the disease at any period, but they take place with the greatest frequency in the earliest stage, while all through the disease the symptoms which appear the earliest have the greatest tendency to temporary spontaneous betterment. This is true whether we consider motor, sensory or visual symptoms.

Coming now to such symptoms as are seen in any stage of the disease and studying them with regard to their relative frequency value, we find sets of fairly consistent figures contributed by several authors and totaling a large number of cases. The most frequent single symptom of multiple sclerosis probably is tremor. It occurs, a comparatively late symptom, in about 70 per cent. of the cases. The tremor may begin as such in one extremity, especially in one arm, or it may have been preceded by the slow and clumsy movements we have already described. The character of the tremor is almost pathognomonic. Practically always it is absent in rest and always appears with voluntary motion and sometimes with reflex, automatic and associated movements. It is on this latter account that Oppenheim suggests calling it "motion tremor," instead of intention tremor. The phenomenon is especially well seen in the large muscles of the extremities and trunk. The entire involved part shakes with excursions of considerable amplitude some four to six times a second. The tremor is observed best in the arms, but is also seen well in the head—the supporting neck muscles inducing sidewise or nodding movements. The head supported in bed shows no tremor. Occasionally the face and jaw muscles show the tremor. Bouchard has found examples of the tremor appearing at rest, as in Parkinson's disease.

Almost as frequent as tremor are subjective sensory disturbances. These remain over from the early stage, and their character as feelings of numbness and tingling and constriction sensations about the trunk does not change much, while the areas involved frequently change, except as regards the ends of the extremities, and often grow in extent.

Motor disturbance in the limbs varying all the way from slight spastic weakness to paralysis with fixed contractures is a very important symptom. The stiffness in its beginning may be observed to increase with repetition of motion, e. g., if passive movements of incomplete excursion are rapidly and repeatedly executed the resistance will gradually be more and more noticeable. Another evidence of this light grade of spasticity will be found in the resistance to sudden passive movements of the joints. Higher grades of spasticity are, of course, harder to overcome and may finally lead in multiple sclerosis to permanent contrac-

tures which are apt to begin with attacks of localized spasms, principally as extension cramps of the legs. The contracture at first is mostly of the extensors, but later the flexors overcome so that, in cases where there is a large area of sclerosis in the dorsal cord, the heels may touch the buttocks. The arms suffer less. The gait is, of course, soon affected. Early the patient may show the phenomenon of increasing stiffness with repeated movement in his motor apparatus, so that a walk set out upon becomes very difficult or has to be abandoned on account of the terrific stiffness which did not exist a few minutes before. In general the type of the gait is spastic paretic—feet drawn along the floor, overlapping, legs adducted—but the picture may be modified by existing disturbances of equilibrium, by tremor and weakness. Any cerebellar ataxic feature of the gait, if present, may be brought out by ordering the patient to quickly stop or turn. The entire body may sway (Oppenheim's vascillation) in walking as the result of irregular contractions of the trunk muscles. The paralytic process affects oftenest both legs, less frequently both arms.

In contrast to the above, it must be asserted that in rare cases, as I have seen, even where severe tremor exists, the muscular strength may be excellent and the patient be capable of doing heavy work. Another contrast to the usual type of spastic paralysis is found in the exceedingly rarely observed temporary flaccid paralysis.

Dizziness sooner or later supervenes as a feature of a goodly majority of the cases. It usually asserts itself in attacks which sometimes may be so severe that the patient falls to the ground. Locomotion and sudden movements of the eyes are inducing causes for seizures of vertigo. Nystagmus is variously estimated as appearing in 45 to 75 per cent. of the cases; optic atrophy almost unanimously as occurring in 50 per cent. Optic neuritis has been observed. Scotoma, usually of the central type, is not infrequent. Speech difficulties ultimately appear in about half the cases, but true scanning speech is not nearly so frequent as is generally supposed. One writer places its total incidence at 12 per cent. In the classic cases of Charcot the speech is slow and the words are split up, the syllables are separated by pauses. But before this the speech of a spelling child may be simulated. Other patients simply show monotony of tone or stumbling over syllables. Hoarseness may be present.

The bladder functions are very frequently disturbed, but only rarely permanently. Difficulty in emptying the bladder, retention or incontinence may appear and remain for days or weeks and then disappear to return again after a time. Rectal incontinence is a rare phenomenon at any stage of the disease.

Mental conditions in this disease, which is as prone to attack the brain as the spinal cord, form an interesting chapter. It is decidedly rare for patients with multiple sclerosis to come to their end without showing psychic abnormalities. The typical psychosis is mild dementia with euphoria; patients lack appreciation of their condition, they have the unwarranted optimism of general paralytics. The intelligence is lessened and the memory is poor. A young woman, for instance, will

appear very silly, giggling in the ward, not caring to tell her health history or to discuss her case. She will whisper almost meaningless phrases to the doctor and will gently slap his arm. The usual run of cases show only the slighter changes, but in others attention, memory and normal association of ideas slowly fade away and, as Charcot insisted, in rare instances the end picture may closely resemble general paralysis. Marked dementia, hallucinations and delirium, however, are unusual. Other patients show early ill humor, developing, perhaps, into melancholia, and later paranoid states may supervene.

The exaggerated emotivity which exists in some patients—demonstrated by the tendency to laugh and cry easily—shades over into attacks in which the victim is compelled to laugh or cry, sometimes with spasmodic explosive sounds as if choking. These latter occur quite independent of any corresponding mental attitude, indeed the attack is developed quite against the patient's will—laughter is without merriment and weeping without sorrow. The attack is a motor spasm probably conditioned by a lesion in one of the higher coordinative centers, perhaps in or about the optic thalamus; a neurologic, not a psychic, phenomenon.

Defect of sensation is to be found by objective examination in perhaps about a third of the cases. Some authors think that it is rarely intact during the entire course of the disease, but it is certainly the exception to have severe lasting disturbances. The examiner may miss the abnormality at any given examination because of its light and fleeting character. The senses of touch, pain and temperature are apt to be all relatively diminished in degree and there may be some disturbance in the sense of position. Or, again, lowered temperature sense may exist alone. The localization of the sensory disturbance is, for the most part, at the ends of the extremities—where most of the paresthesias occur—but may exist in a cerebral type as a hemihypesthesia. Curschmann says that occasionally there is a glove or sleeve distribution of anesthesia which is not influenced by suggestive treatment, and hence is not of a hysterical nature. In very rare cases there may be a complete hemianesthesia and in still more uncommon ones the picture of a Brown-Séquard sensory defect may obtain.

Headache seems to be a point upon which there is less agreement. Some think it is a very common complaint in multiple sclerosis and others state that it seldom occurs. Perhaps the ascribing of such a common trouble to the organic disease is not often done by the physician, and perhaps sometimes the patient thinks it is not worth reporting.

A possible example of what may be discovered in the way of symptoms by looking for them is found in Berger's statistics where he maintains that 20 per cent. of over 200 cases had at some time some disturbance of the facial nerve. We have already spoken of this under the head of an initial symptom. The trouble tends to recur. In some reported cases an isolated facial paralysis has been found to be due to a sclerotic patch affecting the facial nerve in its intrapontine path.

Severe apoplectiform attacks are by most recent authors accounted to be decidedly rare. Frankl-Hochwart says about 1 per cent. experience such seizures, Berger found that 17 of his 206 cases had had hemiplegic symptoms, while Müller found no instance among his 80 cases. All sorts of variations may occur according to the laws of localization—aphasia may accompany the hemiplegic paralysis, or the nuclei of the pons may be involved. Sometimes hemiplegia alternans has been observed. Also sudden unconsciousness followed by paraplegia or even by quadriplegia has been recorded. In any given patient such attacks, although severe, may be entirely recovered from and repeated a number of times.

In contrast to the above, light apoplectiform attacks are, however, experienced by about a quarter of the patients. In such cases there may be a fleeting cloudiness of consciousness or attack of fainting or dizziness accompanied by suddenly appearing weakness upon one side or in one extremity or by a light disturbance of sensation. Much rarer are the so-called epileptiform attacks. These may possibly be of the Jacksonian type of seizure or partake of the nature of either major or minor epilepsy.

Ataxia exists in a few cases without motor weakness. During walking the toes are slipped forward with evident difficulty of coordination and the foot is raised too high and the heels stamped down. The ataxia of the legs may be demonstrated also in the prone position, but in many cases there may be difficulty in differentiating it from an existing tremor. Where the disturbance of motion is greater when the eyes are closed, then ataxia is certainly present. In the rarest instances ataxia of almost a tabetic type may be found with hypotonia of the musculature and even with absent knee-jerk.

It is not extremely rare in multiple sclerosis to see atrophic conditions in a group of muscles, e. g., the interossei, or in a whole extremity. But it is exceedingly unusual to find such an atrophy accompanied by reaction of degeneration. The atrophy is the result of the sclerotic process extending to the anterior horn of the spinal cord, but, according to Le-Jonne, the motor cells are attacked in such a way that the atrophy proceeds fiber by fiber, and the function is preserved to the electric current because until the end there are some good fibers left. As a matter of fact, however, after the process has gone on for some time, the electric irritability is quantitatively diminished.

Of course, in a disease with such widely distributed lesions throughout the central nervous system there must be a number of other isolated symptoms which may rarely occur. Deafness, for instance, may proceed from a plaque of sclerosis in the medulla, a lesion which may also account for the occasional appearance of subjective noises or for hyperesthesia acusticæ. Oppenheim has seen an analogous result in a nerve of general sensation—a persistent trigeminal neuralgia—from an island of sclerosis at the point of exit of the fifth nerve in the pons. Disturbances of the sense of smell on one or both sides and of taste have been reported. More important is interference with the function of the intrinsic laryn-

geal muscles. Leube, Lori and a number of others have reported cases. The usual phenomenon is paresis of the adductors, rarely developing into a definite posticus paralysis. The effect upon the voice is to render it hoarse or monotonous. In phonation a tremor of the vocal cords is occasionally seen. This tremor may extend to the respiratory muscles and give a kind of tremulous breathing. Limited mobility of the tongue, with fibrillary tremor of the same or even with hemiatrophy, may be the result of interference with the hypoglossal nerve, or its nucleus.

The condition of the reflexes is of the greatest import because of the frequency of abnormalities. Morawitz says the abdominal reflexes are quite absent in more than one-half of the cases and that in fully 75 per cent. they are not normal—that is to say, they are either bilaterally absent, are pathologically weak, or are not to be found on one side only. Müller states that a complete and permanent absence of the abdominal reflexes existed in 62 per cent. of his cases, and that they were more or less abnormal in a total of 80 per cent. At least half a dozen other investigators have corroborated these statistics. Thus it seems that this sign is perhaps the most valuable single finding to be met with in multiple sclerosis.

The cremasteric reflex is also by Müller and others found to be a sign of worth. In only the minority of the male patients is it found normal—and the abnormality varies all the way from bilateral absence to mere weakness on one side.

The Babinski phenomena—the extension of the great toe when the sole of the foot is stroked—is another most valuable sign. Looked for at a fairly advanced stage of the disease it is very seldom found absent. This sign especially partakes of the changing character of the symptomatology of multiple sclerosis and consequently may be found at one time and not at later examinations. The same may be said of Oppenheim's reflex, which follows its usual rule of being present sometimes with the Babinski phenomenon and very occasionally without it. Gordon's paradoxic reflex may also rarely be discovered. Remak has described cases in which on account of the excessive reflex irritability dorsal flexion of the toe or foot can be induced by pinching a fold of skin on the anterior surface of the thigh.

Of the tendon jerks there is not much of value to be said because they are not particularly characteristic of multiple sclerosis and merely follow the usual rule in spastic paretic conditions. The knee-jerks and Achilles jerks are, of course, exaggerated unless there is some complicating condition, and the increase in myotatic irritability may lead to ankle clonus and less frequently to patellar clonus. Sometimes, indeed, percussion of the patellar tendon will induce a momentary trembling of the whole extremity—the "spinal epilepsy" of older writers. The arm jerks are not as frequently exaggerated as the leg jerks because of the greater immunity of the upper extremities from the motor involvement. The recently described carpo-metacarpal reflex (tapping of the wrist just below the styloid process of the ulna causing a sharp flexor contraction

of the fingers if they are already slightly flexed) is of some value in verifying suspected motor interference.

The general condition of patients with multiple sclerosis is usually good. The commonest victims are young, otherwise healthy, well built and strong. In the earlier stages no unusual proportion of internal disease attacks them. The state of nourishment is apt to be for the most part good up to the time when the patient has to take to bed, that is, unless bulbar symptoms have interfered with alimentation. Only in the very latest stages do patients suffer from severe complications of their organic disease; cystitis, pyelonephritis, bed sores and aspiration pneumonia are the usual causes of death.

No account of the symptomatology of multiple sclerosis is complete without great emphasis being placed on the irregular evolution and the frequent remissions of the symptoms—a point which we have already several times mentioned. Most writers subscribe to the old dictum of Charcot, that it usually takes six to ten years for the full development of symptoms. During the period of incomplete development there are frequent remissions, complete or incomplete, of both symptoms and signs. A number of cases have now been reported which ran their full course in from one to two years, but usually the remissions or the slow development of symptoms give a total life period of at least ten years. The periods of quiescence or betterment may last for months or years, a quite stationary condition having been observed in Strümpell's clinic for over seven years. Another point: even though well along in the disease, the symptoms may not be of a disabling nature and the person may even be at heavy work unaware of his condition.

The multiplicity of symptoms in multiple sclerosis has given rise to a natural desire on the part of authors to classify them in forms and types and pictures. There has been much talk of classical and of atypical forms. The possibility of innumerable combinations in this disease, which is so unsystematic and unpreferential in its distribution throughout the central nervous system, has foiled any attempt to satisfactorily schematize the symptoms. Some authors, indeed—such as Buzzard and Redlich—specifically warn against naming types. The so-called classic form with Charcot's triad of symptoms is classical only in a historical sense. As I have said, Müller found only 15 per cent. of his patients presenting the triad at the time of diagnosis. The idea of Charcot, then, that all other cases are "formes frustes" will hardly hold good. Müller pleads for simply dividing the cases into those with usual combinations of symptoms and those presenting unusual pictures. The most common group, he maintains, are those beginning with (a) isolated or predominant spinal symptoms; next those beginning with (b) isolated or predominant cerebral symptoms; and more rarely those beginning with (c) isolated or predominant bulbar symptoms. Other writers, e. g., von Leyden and Goldscheider, believe that the most common type shows cerebral and spinal symptoms developing concurrently. If the future classification of this difficult matter is to be according to topographical location of the lesion, then I think we are ready for the introduction of

a sacral type; first named, but probably not first observed, by Oppenheim. This author describes a case with beginning weakness of the legs and retention of the urine, then betterment. Later there was urinary incontinence, pains in the legs, incontinence of feces, and sexual impotence. Other and more usual symptoms developed still later. Just such a case as this I saw myself in 1906—a man engaged in active farming who came down from Wisconsin for examination. He was a strong and healthy looking man of 40, who at the examination showed unmistakable evidences of multiple sclerosis, but whose only complaint until recently was apparently causeless attacks of incontinence of the bowels, which at varying intervals had troubled him sorely for eleven years. He had experienced unusual feelings of weakness for the last three years.

There is one classification of the symptomatology, viz.: into acute and chronic types, which will have to be finally decided on by pathologists. A number of competent observers have reported cases which quickly developed all the most frequent symptoms of multiple sclerosis and ran their course in from six weeks to six months. Marburg has lately contributed most fully to this subject. He says that usually an abnormal feeling of tiredness is followed by paralysis of either cerebral or spinal type and then many other symptoms common to the disease develop in the usual evanescent manner. As in the chronic form, so here the Charcot triad is generally not present. Marburg apparently believes the disease process to be practically the same in both chronic and acute forms.

A little more generalization of the symptomatology can be accomplished by stating some of the symptom pictures which may be present. The most common of these is simple spastic spinal paralysis—a picture which may be portrayed early and maintained throughout the course of the disease, especially if we allow for the detail of optic atrophy. Then, too, the symptoms of transverse myelitis may be closely simulated; Flatau, Siemerling and Nonne record such cases. Paresthesias, pain in the legs, disturbance of the bladder, bed sores and lost knee-jerks dominate such a picture. LeJonne believes that at times the well-known syndrome of amyotrophic lateral sclerosis is imitated so well as to form a special type of multiple sclerosis. The symptomatology of Brown-Séquard paralysis had also been observed. In a few cases the bulbar symptoms come to the foreground to such an extent that the regular type of bulbar palsy may be under consideration. In one case of this type glycosuria obtained. Some instances of simulation of apparently acute inflammation of the upper cord, medulla and pons—giving acute ataxia of upper extremities with bulbar symptoms, hemiparesis alternans and alternating disturbance of sensation—have been recorded, all of which symptoms quickly disappeared with later development of other signs of multiple sclerosis.

There is no reason why multiple sclerosis should not be found combined with other nervous diseases and thus have its symptomatology interfered with. It is said to be fairly often complicated by hysteria, and Westphal saw a case of combined multiple sclerosis and tabes.

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THE EYE MANIFESTATIONS OF DISSEMINATED SCLEROSIS.

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In disseminated sclerosis the study of the functions and motility of the eyes is of much diagnostic importance, since eye symptoms occur frequently, early and often in a characteristic manner. Visual disturbances were found by Uhthoff in one-half of 100 cases of this disease at the time of the examination. Since the optic lesions, though often an early incident, may occur at any period, the chances of impairment of sight some time during the course of this long-lasting disease are very much greater than 50 per cent.

The involvement of sight is often an early manifestation. It may even precede all other symptoms by many years; hence its great diagnostic significance. It is about as often one-sided as double-sided. When bilateral it is not necessarily alike on both sides. The sight may fail suddenly or very rapidly or in other instances gradually. The disturbance of sight is often transient in duration or at least variable in course, and good recovery or at any rate satisfactory improvement is not uncommon in this disease. But, again, later aggravation or relapses are also met with. Double-sided complete blindness is very rarely observed in insular sclerosis.

On analyzing the patient's failure of sight, various forms of defect are found by measuring the field of vision. Rarely there is dimness, with intact field and no defined scotoma. Often the field is found uniformly restricted, as in any other form of optic atrophy. Irregular constriction is more suggestive of sclerosis, and especially so if combined with a central scotoma. A central scotoma with intact field, fairly common, may resemble the disturbance in retrobulbar neuritis. It is not difficult to distinguish in the case of a central scotoma between the toxic forms of retrobulbar neuritis and insular sclerosis by the history. If

one-sided, the scotoma could, in fact, not be due to toxic influences which act always bilaterally. But it may be difficult to differentiate between the scotoma of sclerosis and that of a non-toxic retrobulbar neuritis which has often no preceding history. In such a case bilaterality would favor the probability of sclerosis as the cause.

The ophthalmoscopic findings are not always proportionate to the degree of sight. Occasionally the disease of the nerve is not visible with the ophthalmoscope, although sight may be poor, while again a very pale and atrophic looking nerve may be found, notwithstanding a very fair degree of sight. The most common lesion is primary atrophy of the optic nerve, which scarcely ever gets to be complete in both eyes. Quite common is incomplete or partial atrophy, involving more of the temporal side of the papilla. A smaller number of atrophies are secondary to a previous neuritis, as suggested by the irregular contour of the nerve head or residues of inflammation in or around the disc. Active optic neuritis is met with in some 5 per cent. of instances. In another 5 per cent. no lesion can be seen with the ophthalmoscope. There is either a retrobulbar neuritis behind the globe not involving the papilla, or there is a patch of sclerosis in the nerve somewhere in its course. It is remarkable that characteristic sclerotic patches may disappear without leading to secondary changes or may persist for a long time without necessarily causing descending atrophy.

The movements of the eyes are disturbed by palsies in at least 20 per cent. of all cases of sclerosis some time during the course of the disease and often as one of the earlier manifestations. Like the visual disturbances, these palsies are apt to be incomplete and not rarely transient, ending in recovery, though the prognosis is always somewhat uncertain. The palsy is more often one-sided than bilateral. The sixth nerve is the one more often involved, causing failure of abduction and homonymous diplopia. About equally common, though less frequent than abducens paresis, are partial or complete involvement of the third nerve or paresis of associated movements like up or down or lateral movements or the power of convergence. Paralysis of associated movements means necessarily the presence of a sclerotic patch in the central nuclei governing the associated movements of the two eyes. These lesions, too, are often transient in duration. Less common is complete temporary or permanent abolition of all movements of either or both eyes.

Insular sclerosis more than any other acquired brain disease may cause nystagmus, oscillations of the two eyes, usually in the horizontal plane (12 per cent. of Uhthoff's observations). Much more common, however, are nystagmoid movements, which are met with in nearly one-half of all sclerotic patients. The eyes are quiet as long as the subject does not turn them to either side (or less commonly up or down) as far as motion is possible. When such an extreme terminal version is attempted, jerking oscillations occur at once and are kept up as long as the effort is maintained. Since nystagmoid movements may occur in some normal subject, also relatively often in various forms of exhaustive diseases and are by no means uncommon in various other nervous affec-

tions, they can not be called diagnostic of sclerosis. But on account of their frequency in this disorder their occurrence is suggestive, especially when associated with some palsy or visual disturbance. Nystagmoid movements may diminish or disappear again. Whether regular nystagmus is ever of transient nature I have not been able to learn.

Pupillary disturbances are less frequent in sclerosis (under 15 per cent.). Absence of reflex contraction upon exposure to light is not often observed, although the Argyll-Robertson type of pupillary rigidity so common in tabes does occur exceptionally, too, in insular sclerosis. More frequent is pupillary sluggishness, especially associated with a narrow pupil, less commonly with an enlarged pupil. Inequality of the two pupils is more often met with, but even more frequent is bilateral narrowness with normal or slightly reduced mobility.

DIAGNOSIS OF INSULAR SCLEROSIS.*

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Published observations of late years almost warrant the statement that in its onset and early stages insular sclerosis may very closely simulate every disease of the nervous system, both functional and organic. However, while much may be said in support of this proposition, I shall at this time only attempt to call attention to some of the diseases relative to which the question of differential diagnosis is most likely to confront the practitioner. Before proceeding further the general statement may be made that insular sclerosis frequently begins much later in life than was formerly supposed. Ormerod has recently reported a case with autopsy beginning acutely in a hitherto healthy woman of 54—that scanning speech, intention tremor and nystagmus are frequently late symptoms and may even never occur in cases that extend over a period of many years, but that, nevertheless, they are highly diagnostic whenever they do make their appearance.

HYSTERIA.

That hysteria may simulate every known disease is a statement pretty generally accepted, though perhaps not strictly true. If, however, it is measureably true, the similar statement made above in refernce to insular sclerosis will suggest the propriety of their conjoint consideration in diagnosis. Paresthesia, hyperesthesia and anesthesia, in their mode of onset, degree, distribution and disappearance, may be identical, and the same may be said of the motor disorders, such as the monoplegia, paraplegia and diplopia. No matter how prominently one tries to keep in mind Sir William Gower's famous aphorism, "Symptoms of hysteria painted on an organic background," months and even years sometimes elapse before an organic background can be demonstrated even in the

* Read at joint meeting of the Chicago Medical and Chicago Neurological Societies, April 1, 1908.

development of cases where finally unequivocal symptoms of insular sclerosis make it certain that an organic base existed from the first. Later investigations have tended strongly to render a diagnosis of hysteria far less acceptable than formerly, and in clinical neurology the study of insular sclerosis has contributed mainly to this result, though the influence of brain tumor in the same direction has been considerable. Formerly if a girl previously healthy developed paraplegia with or without paresthesia or anesthesia of the paralyzed parts so that within a few days or hours she could no longer stand or walk, and if after days or months the symptoms rapidly or suddenly disappeared perhaps under the influence of suggestion so that she danced and played tennis as well as ever and so continued for months, a positive diagnosis of hysteria would have been pronounced without hesitation, whereas it is now well known that such a picture is entirely compatible with the existence of insular sclerosis. This is equally true of diplopia and other motor as well as sensory disorders. It is doubtless true in some cases a careful examination would show that the remission was not complete, though so regarded by the patient. However, in a symptom like diplopia where more or less positive tests may be employed, complete disappearance may be demonstrated extending over a period of years in cases where subsequent events render it practically certain that the organic changes of insular sclerosis were the cause. The discovery of organic disease as a basis of symptoms constitutes then the differential diagnostic problem. Actual and persistent sphincter derangement when it appears affords highly conclusive evidence in a hitherto doubtful case, but, though it very commonly develops some time in the course of the disease, it may be delayed for years. The Babinski sign—extension of the toes on stroking the sole—has come to be pretty generally accepted as evidence of organic disease; only too often, however, the stipulated manipulation provokes no kind of a response whatever.

Blanching of the temporal disc, indicating commencing optic atrophy, together with loss of the abdominal reflex, have been ardently exploited by Edwin Mueller of Breslau as the earliest signs of insular sclerosis; indeed, I believe he claims they are present in every case from the first. Extended observation by others do not confirm his dogmatic statement. Likewise his assertion that the abdominal reflex can always be demonstrated in healthy adults has been generally contradicted. I may say my own experience does not permit me to agree with Mueller's sweeping propositions. Nevertheless, I believe loss of the abdominal reflex invariably occurs on the paralyzed side in hemiplegia from organic brain lesion, and optic atrophy first manifested by a change in the temporal disc is frequently met with as a part of insular sclerosis. Therefore, both the condition of the disc and the reflex should be noted as a matter of routine in all neurological examinations, and perhaps it is only fair to admit that the agitation Mueller has stirred up has served a useful purpose. The significance of nystagmus, scanning speech or intention tremor, either alone or variously combined in the course of the usual symptoms of hysteria, is too obvious to require comment, though,

according to my own observation, such a change of articulation as is met with in general paresis is more frequent than scanning. I have also known the voice to become very high pitched, nasal, weak, plaintive and whining quite independent of any corresponding mental state. The fact of finding such evidence of hysteria as loss of the faucial reflex, limitation of the visual fields, etc., while somewhat comforting, do not make it certain in a given case that insular sclerosis is not in progress, for in a predisposed person symptoms of hysteria may accompany, even to the point of predominance, those of any other disease. Attacks of vomiting, inordinate and uncontrollable emotional manifestations and epileptiform seizures are common to both diseases, though the latter may simulate true epilepsy more closely in insular sclerosis than in hysteria, that is to say, there may be sharp clonic spasms, with tongue biting in the former but not in the latter. Though only touching some of the high places, so to speak, of this part of my subject, I shall have accomplished my purpose if I have made it appear that so-called functional symptoms are always worthy of careful and serious consideration.

BRAIN TUMOR.

The origin of the cerebral symptoms in brain tumor and some cases of insular sclerosis is doubtless essentially identical, and in those cases of the latter disease which begin with a sudden or acute onset it may be impossible to make a differential diagnosis till definite involvement of the cord can be demonstrated. Optic neuritis with secondary atrophy, intense headache and vomiting, apoplectiform and epileptiform seizures are common to both and may constitute the sole symptoms in either disease for months. However, delimited manifestations of this sort extending over any considerable period are far more appropriate to brain tumor than to insular sclerosis.

TABES.

Most authorities agree that insular sclerosis is by far the most frequent chronic organic disease of the nervous system in the rural population, as tabes is most frequent among urban residents. Some investigators, indeed, maintain that it is scarcely second to tabes in the latter classes. Their onset and early course frequently present many symptoms in common, and, while examination would frequently, if not usually, reveal signs in tabes highly pathognomonic, even before any symptoms have appeared that might lead the patient to seek medical counsel, there are not a few cases in which the differential problem is presented. Among symptoms common to both diseases may be mentioned optic atrophy, transient diplopia, various paresthesias, including the girdle or constriction sense, as well as anesthesia in different forms, sphincter disturbance, impotence and ataxia.

Insular sclerosis can not be held to have pathognomonic signs in anything like the same degree as tabes. Either the Argyll-Robertson pupil or lightning pains, in conjunction with loss of knee jerk, or the latter alone, with any of the symptoms mentioned above as common to both

diseases, might justify a diagnosis of tabes, but nystagmus, intention tremor, scanning speech and optic atrophy can only be regarded as cardinal symptoms of insular sclerosis when they are variously combined. Any or all of them are frequently wanting in the early years of insular sclerosis or even throughout the entire course, while many other highly diagnostic signs are present, whereas loss of the knee jerks is practically always found in every stage of tabes. In rare cases, however, they may still be demonstrated, though impaired in the early stages. In insular sclerosis, on the other hand, the knee jerks are commonly increased in the early stages, though rarely they may be greatly diminished. I will here present notes of two cases recently seen in hospital practice which illustrate some of the points above referred to.

CASE 1.—A married woman of 25 of dissolute habits, probably infected with syphilis at the age of 13, enjoyed excellent health till four years ago when she began to have pain in the lower right abdominal region and soon after a marked girdle sensation was noted, also there was thickening of the lower right tibia with pain. These conditions have persisted. Three years ago she began to have periods of retention of urine, lasting several days at a time when she had to be catherized, the odor of the urine being very offensive. For the past year there has been some vertigo and nausea, worse of late and she feels as if she were moving through space, floating upward to the ceiling. August 16 she could not read a letter on account of haziness of vision; got rapidly worse so that by January 8 she could barely distinguish day from night. Two epileptiform attacks occurred four weeks ago with foaming at the mouth and tongue biting. Both pupils are widely dilated and stationary. There is distinct nystagmus in both eyes, the left eye is turned outward and upward and there is considerable drooping of left lid, but all the external ocular muscles act perfectly when tests are made. There is marked atrophy of both optic nerves. The tactile sensation is normal everywhere but reaction to pin pricks is generally reduced excepting that a small patch below left breast is hyperesthetic. The tendon reflexes are all normal except the patellar which can only be demonstrated by reinforcement. There is slight plantar flexion, the abdominal reflex is present and equal on both sides and there is marked ataxia of all four extremities. Here is evidence of a widespread progressive organic disease of the nervous system in which nystagmus reduction of the knee jerks without decrease of the Achilles reflexes incline me to a diagnosis of insular sclerosis rather than tabes or syphilis of the brain and cord.

CASE 2.—An otherwise healthy man of 44 had syphilis fifteen years ago. Five years ago noticed failure of vision in right eye which in the course of a few months advanced to complete blindness, vision in the left eye however remained good. He says there has been some urinary incontinence for the past fifteen years. Two years ago he noticed pains in left hand accompanied by weakness. The pains were not constant but would shoot up the arm; at the same time he had a similar condition in the right leg below the knee chiefly in the foot. For the past year he has noticed distinct wasting of the muscles in these parts. For the past three months he has suffered no pain. There has been no headache or nausea. Examination shows a well developed man but his mentality seems somewhat clouded. The right eye is totally blind. The left eye presents drooping of the upper lid and there is concentric restriction of the visual field, the pupils are small, sluggish to light and react not at all to accommodation. There is distinct nystagmus in both eyes, the left upper lid can be raised fully without extraordinary effort.[1] There is marked atrophy of the muscles of the left forearm and hand, the thumb lies in same plane as fingers. In the right leg the gastrocnemius, solens and peroneous group are much wasted. The tendon reflexes are entirely absent on both sides; there is no plantar response. The abdominal

1. The patient left the hospital unexpectedly before the fundus was examined.

reflex is present on both sides, but less marked on the left. The mental impairment is such as not to admit of a very close estimate of the condition of sensation. It is not anywhere very grossly reduced. There is considerable ataxia in all four extremities. In this case though knee jerks and Achille jerks are absent, the presence of nystagmus and the neat delimitation and distribution of marked muscular atrophy seem to suggest a diagnosis of insular sclerosis rather than tabes, progressive muscular atrophy or cerebrospinal syphilis.

Finally, in support of my contention that the clinical diagnosis of insular sclerosis may involve a careful scrutiny of the whole field of neurology and psychology, I will refer briefly to a case recently reported by Dr. J. A. Ormerod,[2] of London. A woman of 54 was sitting resting in the afternoon when, without warning, her legs became straight and stiff, with the toes spread out. At the same time she was attacked with violent diarrhea. Both the spasms and the diarrhea subsided in from two to three hours. In the forenoon of each of the three following days she had a similar attack, lasting from three to five hours. After this the legs began gradually to draw up, and this process continued with some variations for about six months, when the right knee was under the left axilla and the left similarly but not quite so severely contracted. Almost from the first there was a tight feeling about the waist, and after four months the abdominal muscles became hard like a board. About five weeks from the onset painful cramps set in, in which the legs went out straight and then drew up again quickly. She was subject to these for several weeks. About six weeks after the onset definite sensory symptoms appeared and at the same time incontinence of urine, which in a few weeks had advanced so far that she was entirely unconscious of the act of micturition. The painful sensation ran from the knees to the toes and seemed to the patient like a wound-up clock running down. It subsided in about three months, and an examination made ten months after the onset revealed no definite anesthesia. The patient died about thirteen months after the commencement of her illness, death having occurred nine days after an operation undertaken for the purpose of straightening the legs, though she was slowly failing prior to that event. Fifteen years before she had had rheumatic fever and scarlet fever at the same time, since which her heart had been weak.

Four years before she had had a stroke affecting the right side of the body and lasting twenty-four hours, possibly a premonitory symptom of the insular sclerosis. The postmortem showed placques of disseminated sclerosis in the spinal cord, principally in the cervical region, in the pons and medulla, right optic thalamus and right optic tract. Disseminated sclerosis was not suspected during life.

There may be some advantage in dividing the cases according to the mode of onset into groups, for it is at this period that the question of diagnosis is of most interest.

First.—Those of sudden onset:

(a) Paralysis or spasm of various distribution, including and perhaps limited to the ocular muscles, causing diplopia. These may not be

2. Brain, 1907, p. 337.

accompanied by sensory changes or these latter may predominate. They usually attain their highest point and begin to recede within from a few hours to a few days and may either wholly or partially disappear to recur from time to time at shorter and shorter intervals, in which recovery tends to become less and less complete.

(b) There may be epileptiform attacks, with foaming at the mouth and tongue biting or apoplectiform strokes with hemiplegia which usually completely disappears in a few days.

(c) Sudden temporary disturbances of vision other than diplopia, with or without vertigo.

Second.—Acute or subacute onset. With the exception of the epileptiform and apoplectiform seizures, any or all of the above symptoms may require from a few days to several weeks to reach their highest point and then slowly recede to recur after a varying period.

Third.—Those with chronic onset, the most common type being some form of progressive spastic paraplegia, in which perhaps for some years there may be no sensory symptoms or sphincter involvement.

Progressive weakness may be limited to only one leg at first. Visual defect in which fundus changes are sooner or later manifest belong under 2 and 3.

In conclusion, it may be said, when a given symptom points strongly to disease of the nervous system. but can not be classified with other well-known diseases, insular sclerosis and brain tumor should be kept prominently in mind, as they may give rise to a wide range of symptoms even more diverse than the variety of structures which are the seat of the pathological process, would seem to justify.

THE COURSE, PROGNOSIS AND TREATMENT OF MULTIPLE SCLEROSIS.*

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The course which a case of multiple sclerosis may pursue and the length of time over which it may extend depends to some extent on the age of the individual. As a rule the disease pursues a chronic course in the younger extending over a period of 5, 10 or even 15 years, as the chances for the disease to become arrested are better than in later life and thus less likely to become progressive in form. However, cases in children have been reported where death took place from this disease, the beginning of which, perhaps, dated back a few months only, at which time there was a history of some acute infectious disease, such as typhoid fever. In such cases, however, some doubt may properly arise in our minds as to whether or not the disease had not existed undiagnosed previous to the typhoid or perhaps it was a case of myelo-encephalitis rather than a case of multiple sclerosis, although Marburg reported one or two cases as proven by autopsy to be multiple sclerosis, which ran a rapid

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course and terminated in about one year's time. The course may also depend on the part of the central nervous system involved. The disease may be confined chiefly to the latent areas and remain undiagnosed for a long period. It may produce a type of disease closely resembling primary spastic paraplegia, in which case it pursues a chronic course. If it assumes an amyotrophic lateral type the outlook is not so good, and still shorter will be the course if the posterior columns also become involved, presenting somewhat the picture of a chronic myelitis, where there are disturbances of the bladder functions and the development of bedsores to hasten the course. So also if the medulla becomes the seat of the sclerotic patches may death be caused by the disturbances of deglutition and its consequences or by respiratory disturbances. In the hemiplegic type, sudden terminations by hemorrhages may arise. Likewise those so closely resembling paralytic dementia are liable to sudden termination. With all these possibilities to be considered, yet one of the characteristics of this disease is the tendency to remissions, extending over a few weeks, months or even years, during which period the conditions remain unchanged, or the patient may improve to such an extent and for such a length of time that he may be pronounced cured. Oppenheim mentions two or three cases where all the symptoms subsided and after the lapse of five to ten years nothing of the disease was noticeable. He also observed a case in a woman, as reported by Maas, his assistant, in whom the symptoms were in abeyance for a period of thirteen years, only to return. It is probable that the so-called "cured" cases of Charcot were of this type. These periods of progress and remissions may occur spontaneously or the disease may assume renewed activity following some acute illness, trauma, infection, shock, fright, exposure or the puerperal state. The prognosis, therefore, as the course, depends on whether the disease is of the progressive type or characterized by periods of remissions. In the former instance the patient usually succumbs within two years. In the latter case the disease may extend over five to fifteen years. The involvement of sphincters renders the prognosis more grave. Recurrent attacks of infections are of bad influence.

As to treatment, the important factors to be considered are rest and proper nutrition and elimination. Rest, in the sense that overexertion must at all times be avoided. In hospital treatment, unless the disease is far advanced, I believe that some of these patients do better when they are allowed their clothes rather than keeping them absolutely quiet in bed, as the spasticity does not seem to progress so rapidly. However, where there is a marked cystitis or decubitus present this is not practical. Warm baths (not hot baths) are of value in aiding the elimination and favorably influencing the spasticity. Fraenkel's exercises are of service in the ataxic states. Electricity is only of benefit from a psychic standpoint and may do good in those subjects combined with hysteria. Massage may be of service in preserving the nutrition, especially in those cases involving the central nutrition of the muscles. Eichorst, in his clinic at Zurich, tried the suspension treatment in a few cases with decided improvement in the speech and tremor in two of them, both of whom showed a relapse in six months. These patients do better in a mild, equable climate. As to the medicinal side of the treatment there

is still less to say. In this day of medicinal agnosticism, when one hears a leading surgeon make the statement that he would be tempted to shoot the doctor who would dare give him a dose of strychnia under any circumstances, were he suffering from pneumonia, what can be said as to the value of drugs in this disease?

While a few preparations, such as arsenic, silver nitrate, potassium iodid, quinin and solanin, have been regarded as of value, their reputation has no doubt arisen because of their administration simultaneously with the usual remissions of the disease. Complications, such as cystitis, pyelonephrosis, bedsores, etc., must, of course, be met as they arise.

DISCUSSION.

1. Etiology and Pathology. Report of Two Cases with Autopsy and Lantern Slide Demonstration, by Dr. Peter Bassoe. 2. Signs and Symptoms, by Dr. William Healy. 3. Ocular Signs and Symptoms, by Dr. Henry Gradle. 4. Different Diagnosis, by Dr. Sanger Brown. 5. Course, Prognosis and Treatment, by Dr. George W. Hall.

Dr. William Healy:—With regard to the abdominal reflex so much discussed nowadays in relation to multiple sclerosis, on looking up the literature of the subject one finds extensive accord with the opinion of Mueller, viz., that this reflex is absent in a very large share of the cases quite early in the disease. Quite a number of men have worked on this subject, Englishmen as well as Germans, and they have collected a good many hundred cases and consequently their word must be taken as worth a great deal. On the other hand, it seems even better demonstrated that the abdominal reflex can be found almost always present in the young people if the proper technique is used. A couple of German investigators examined 3,000 individuals, 1,000 of them being consecutive cases taken from the army. In the latter series the reflex was present in every instance but one, and in that case there was suspicion of organic nervous disease. The general opinion of these men is that the reflex is found practically always in people under fifty who have not nervous or abdominal disease and that in 80 to 90 per cent. of the early cases of multiple sclerosis it is abnormal.

In making the test the patient stands leaning forward so that the abdominal muscles are relaxed. His attention is distracted as much as possible so as to exclude mental effect. One investigator uses the dull end of a pencil, which he says is effective in the majority of cases, but in exceptional cases finds it necessary to use the sharp end of the pencil. The abdominal reflex has been divided into the upper and lower, the epigastric and abdominal. The stroking is done in a line with the mammæ and just below the costal arch for the upper or epigastric reflex, and below the umbilicus for the lower or abdominal reflex. The umbilicus itself deviates towards the side on which the stroking is done as the result of the contraction of the muscles influenced by the sensory stimulus.

THE COMMONER FORMS OF EYEBALL INJURIES.*

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All surgeons are compelled, from time to time, to deal with ordinary eyeball injuries extending in character from the removal of an embedded cinder to those more serious accidents requiring the enucleation of an eyeball. The general practitioner usually sees these cases first, particu-

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larly if he happens to live in small towns or cities, and, inasmuch as the first care of such cases is of utmost importance, he should be qualified to render proper service, and it is with the hope of offering some assistance along these lines with a few practical suggestions that this paper has been written.

Small foreign bodies frequently find lodgment either on the under surface of the upper lid or in the eyeball itself. If the former is the case, the lid should, of course, be turned over and the speck removed with a clean handkerchief or some cotton wound on a match or cotton carrier. A foreign body may stick and lodge in the scleral conjunctiva, or usually the cornea, under which circumstances its removal becomes a matter of much greater importance. The removal of foreign bodies from the cornea is a little operation of extreme delicacy and one that should never be performed thoughtlessly. It should always be remembered that while the epithelial shell of the cornea is strong and protecting in its character, yet, once this membrane is perforated, even slightly, the underlying laminæ become most easily infected by contact with poisonous micro-organisms. It is highly important, therefore, that cinders, emery, sand, etc., that have become lodged in the cornea should be removed with speed before the underlying and surrounding tissues have become ulcerated, and with care, that infection may not be produced by the surgeon himself.

It is first necessary to be sure of the existence of the foreign body, and this is sometimes not easily determined, as the intruder may be exceedingly small and of such color as to be hard to discover. The cornea should be examined by a strong light, either natural or artificial, and a powerful convex lens should be used to focus the light on the cornea, while the surface is carefully inspected under the other magnifying glass. For still further careful examination a drop of 2 per cent. solution of fluorescin may be dropped on the cornea, which will disclose the existence of rough or ulcerated places by retaining the color of the solution after the residue of the drop has been flushed or wiped away. It may be necessary to have the patient move the eye in all possible directions, so that the foreign body is brought into just the light which will disclose its presence, and care should be taken not to confuse pigment spots in the iris with objects embedded in the cornea. This can be done by examining the cornea in profile under strong illumination and a magnifying glass. The fluorescin solution is also an excellent method of detecting the presence and extent of abraded or ulcerated corneal patches, as it stains all denuded surfaces and does not stain intact corneal tissue. By thus defining the abraded areas, small patches may not only be discovered, but, as the diseased surface is clearly defined, it can be easily kept under observation for treatment, cauterization, etc.

After the presence of a foreign body in the cornea has been established, steps must be taken for its removal, and let no one underestimate the importance of this little and oft-repeated surgical procedure, for many an eye has been lost as a consequence of improper and unclean methods. A large proportion of such accidents occur in shops where

flying particles of steel, emery, etc., find easy lodgment in the eyes of the workmen. In most shops will be found a man who has acquired a reputation for skill in the removal of foreign bodies from the eye, and who has always on hand a rough tool or two which he uses for such work. No attempt is made at aseptic precautions, and it is astonishing how many eyes survive such dirty and rough procedures; this wonderment is emphasized when these eyes are afterward seen by the surgeon and the amount of corneal abrasion is noted. The eyes of workmen are often invaded by foreign bodies, which are removed in this manner by the "shop oculist," and the result of such poor work can frequently be seen in multiple corneal scars, which inevitably diminish vision more and more in direct ratio with the number and extent of the scars. I saw, not long ago, a man who lost the vision of one eye by submitting to such procedures, by a fellow-workman, who was suffering from gonorrhea, and have seen many eyes that have been lost from infections produced by the removal of foreign bodies from eyes under unclean and unfortunate conditions.

The first thing, then, to be observed in such work is cleanliness, not to say asepsis. The hands of the surgeon should be clean and the skin around the eye should be washed, the conjunctiva should be flushed with sterile water or, better still, with mild boric or bichlorid solution, and I usually drop in the eye before and after the little operation a small quantity of a 25 per cent. solution of argyrol. The eye should be cocainized so that the intruder may be removed painlessly, and, what is of even greater importance, so that the patient can hold his eye still, for a cornea will become greatly scratched and mutilated if an attempt is made to remove a foreign body from its tissue without the use of local anesthesia.

In case the foreign body is so deeply embedded that simple appliances prove ineffectual, the surgeon may use a slender instrument called a spud or, what I prefer, a Graefe's cataract knife, for the removal. The ordinary spud is, for my purpose at least, too blunt and clumsy in the point to get under and shell out the average foreign body, and I have ascertained by experience that this can be better accomplished by the sharp and delicately pointed Graefe's cataract knife. Either instrument should, of course, be carefully cleansed, dipped in a 95 per cent. solution of carbolic acid and wiped before it is used, and care should be taken not to scratch or mutilate the cornea any more than is positively necessary. Caution should also be exercised that the head and eye of the patient is kept quiet and that the knife does not penetrate the cornea, as might easily happen should a sudden head or eye movement occur. Ample illumination and a magnifying glass are essential to accurate work, the best light being good daylight, and the patient should sit in a chair, with the head resting on a headrest or the body of the surgeon, who should stand behind the patient. Most foreign bodies can be easily removed in this way, but some will be so deeply embedded as to be removable only with considerable skill and patience, and some will break up into smaller particles before the last remnants have disappeared. It happens with extreme rarity that a foreign body becomes so deeply

lodged in the cornea that efforts for its removal will force it completely through the corneal tissues into the anterior chamber, and such rare accidents are usually the result of bungling maneuvers on the part of the surgeon, and it should be borne in mind that in case a foreign body has nearly disappeared through the cornea and into the anterior chamber that before an attempt is made at its removal a broad Graefe's cataract knife should be plunged through the cornea and under the foreign body for the purpose of forming a support to prevent its slipping through into the anterior chamber. Of course, problems like these are materially mitigated if the foreign body is steel or iron, for under these circumstances the Haab or Hirschberg magnet will usually extract them without difficulty. It often happens that cinders, emery and other hot particles will actually burn themselves into the corneal tissues and leave a brownish eschar after the foreign body has been removed. Many patients and even surgeons who see this brown speck are convinced that it is a foreign body to which, indeed, it bears a close resemblance, but a careful examination under a magnifying glass will disclose its identity. It is best to remove such eschars by lifting them out with the small knife, and then to cauterize the underlying tissue with carbolic acid, although many surgeons allow the little eschar to drop off without interference, which, as a rule, will produce a good result. In many cases, however, the eschar acts as a foreign body and produces much irritation, and sometimes ulceration, for which reasons I habitually remove them.

It sometimes happens that fragments of glass will lodge in the cornea or other portions of the eye, producing a clean incised wound, with flaps which are often very much cut under. Such foreign bodies are often very difficult to see on account of their transparency and should be searched for under strong illumination and at many angles where suspicion of their existence obtains. Fortunately, glass fragments do not often remain in the eye, even if the eye has been struck by them, and I can truthfully say that, while I have searched for glass projectiles many times, I have very seldom found them.

It is, of course, quite impossible to enumerate the infinite variety of foreign bodies that may attack the eye and remain lodged in some portion of the cornea or conjunctiva, but the descriptions already given of the usual clinical picture presented in the case of such ordinary bodies as cinders, emery, steel fragments, etc., will perhaps serve as sufficient exposition of their appearance and history to cover that of unmentioned flying particles.

Were it not for the formation of corneal scars after injuries, traumas to the corneal tissue would not be of such keen significance, but, as all opacities of this important membrane are accompanied by more or less deterioration of vision, it follows that surgeons should limit the destruction of corneal tissue as much as possible, for all such denuded areas become invariably opaque during and after healing has occurred. Of course, the location of such cicatrices has much to do with the degree of visual defectiveness, as scars situated directly in the center of the cornea, exactly in range of the best vision, will naturally interfere much more

with seeing than if the opacity is located near the corneal periphery, in the neighborhood of the sclerocorneal junction, where the iritic curtain precludes the passage of light rays through the cornea to the receptive retina.

The essential object to be attained, therefore, in all corneal injuries, and especially those located in or near the center of the cornea, is to limit the destruction of the tissue to the smallest possible area in order that vision may be interfered with as little as possible. In order that this work may be accomplished to the best advantage, it is essential that the location, character and extent of the abrasions be clearly seen and defined, and this can be best accomplished by the use of a drop of a 2 per cent. solution of fluorescin, as previously described. If the abrasion is of recent origin and not ulcerative in character, a mild antiseptic wash, such as a 2 per cent. solution of boracic acid or a 10 per cent. solution of argyrol, will probably be all that is required in the way of medication, supplemented by cold compresses and ocular rest and quiet, in order to permit of the re-establishment of new epithelium; but if the abrasion shows an infective or sloughy character, and if some ciliary infection is beginning to show itself, the eye should be cocainized, and the infective area should be cauterized with tincture of iodin, carbolic acid, or something of this nature, after which a 1 per cent. solution of atropin and a 25 per cent. solution of argyrol should be used, both at the office and the house, and the patient directed to keep quiet and to use freely very hot water fomentations.

Sometimes these cases will not present themselves until the ulceration is very deep, the iritic inflammation very marked, with perhaps iritic adhesions between the iris and lens capsule, and pus commencing to appear in the anterior chamber. The case has now become very grave, and prompt action and hospital care should be instituted. The ulcer should be thoroughly curetted and cauterized with carbolic or nitric acid, or possibly the actual cautery; a 2 per cent. solution of atropin should be dropped in the eye four, five or six times a day; a dionin solution instilled once a day (5 per cent.); a 25 per cent. solution of argyrol should be used four times a day and very hot water fomentations used several hours a day, and a Credé ointment poultice on the eye at night has shown many remarkable results in St. Luke's Hospital. The eye should, of course, be kept clean, the bowels and kidneys open, the diet low but nourishing and the patient kept quiet in a somewhat darkened room. Great benefit is often seen from pilocarpin sweats and the subconjunctival injection of a sterile salt solution, and it is well to administer large doses of the salicylate of soda. But the further prosecution of this subject opens up the vast field of general infective panophthalmitis, etc., with the usual direful consequences, and this is far beyond the scope intended in this paper.

The conservative treatment of severe injuries to the eyeball is a subject of great interest to surgeons, as such cases are constantly presenting themselves for care and advice. The importance of the eye for visual and cosmetic purposes is, of course, too well understood to warrant dis-

cussion, and it is, therefore, a foregone conclusion that every reasonable effort should be made to retain this important organ in as nearly a perfect condition as possible, both for its seeing qualities and also for the proper adornment of the human face. Nevertheless, in the enthusiasm for the preservation of an eyeball after a severe ocular injury, the surgeon should endeavor not to retain in the socket an eye which has not only been destroyed so far as visual purposes are concerned, and been mangled far past the beauty point, but also reached a pathologic condition where it has become a probable menace to the safety of the sole remaining eye. This, then, is what I mean by *conservatism* in the treatment of severe ocular injuries, and it often requires considerable experience and no little judgment to skilfully stand between the extremes of endeavoring to save too many eyes or of endeavoring to save too few. It can not be denied that many eyes are enucleated that by patience and skilful care might have been saved, and this course of ruthlessly sacrificing all eyes which are severely injured can not be too strenuously deprecated. Extreme ocular traumas usually occur in workingmen, and railroads, machine shops, wire shops, etc., furnish a large proportion of these injuries. Certain argumentative considerations naturally present themselves upon the examination of severe bulbar accidents. In the first place, an enucleation is clearly the easiest way out of the trouble, as it is much more difficult to save an eye than to remove it and requires much less time in the hospital, usually less expense to the patient or corporation, and enables the patient to resume work in a much more expeditious manner. Time and money are thus almost invariably saved by removing a badly injured eye rather than by making an effort for its salvation, a process which often lasts for weeks or even months, and is then frequently crowned by failure and a necessary eyeball enucleation.

Such a termination of a protracted case is a humiliation to the surgeon and a disappointment to all parties concerned, and will frequently find the patient and his friends utterly opposed to the operation, while at first, under the influence of the physical and moral suffering and shock of the accident, they would, with almost invariable readiness, have acceded to any operative procedure proposed by the surgeon. At this juncture the patient often begins to wander from one office to the other, frequently into the hands of quacks who promise to effect a cure. Needless money is spent, valuable time consumed, and sometimes serious results, such as meningitis or sympathetic ophthalmia, follow, carrying with them a depressing lesson of the consequences of extreme conservatism and caution. Nevertheless, it should not be forgotten that, as a rule, the surgeon renders himself less liable to adverse criticisms if he, whenever it is at all possible, extends to the patient a probationary period of at least a few days of active endeavor before he positively advises an eyeball enucleation, and reasonable patients usually feel much more reconciled to such a procedure, if it has been preceded by a brief, active and manifest effort at ocular salvation. It must likewise be remembered that while we hold the bug-a-boo of meningitis and sympa-

thetic ophthalmia over our patients' heads, as a menace and as a legitimate means of inducing them to agree to our wishes and to establish ourselves on firm ground in case of ultimate misfortune, these terminations of severe ocular injuries are in reality most remote in their probabilities. Do not misunderstand me as endeavoring to minimize their real importance nor to underestimate their direful history when they actually appear. I believe that they should always be kept in mind and should invariably assist us in the formation of our counsel to patients, but I likewise believe that their occurrence is of extreme infrequency, as in a tolerably active practice of about twenty years in eye surgery I have never seen a case of meningitis proceeding from an ocular trauma, and have not seen to exceed three cases of sympathetic ophthalmia.

Cases of purulent panophthalmitis rarely produce meningitis, as before this calamity occurs the pain and suffering become so severe as to induce patients themselves to be quite willing to be relieved by an enucleation, and even to voluntarily beg for such a surgical procedure. The danger of sympathetic ophthalmia, however, is of a more valid character, especially as the condition of the patient is so pitiably distressing, not to say hopeless, after this dreaded disease actually shows itself. It must also be remembered that severe ocular traumas usually occur in laboring men of limited intelligence and means and of migratory habits, roaming from one city to another and from one surgeon to the other, and that they are quite inclined to seek the advise of quacks whose counsel is usually of the worst possible character. It is, therefore, on the whole, unsafe to allow such patients to get away from proper surgical advice with a really menacing unenucleated eye *in situ*, as sympathetic ophthalmia is a most insidious foe and one that should be avoided where real danger exists. In a case of severe ocular trauma, where, perhaps, great laceration has occurred, and where I feel that an enucleation is the proper step to take, I frequently say to my patients that an eye has only two functions, viz.: sight and beauty, and if both these functions have been unfortunately destroyed and the mangled and disfigured eye may also eventually become a menace to the health of the patient, and the safety of the other eye—and will always remain a source of anxiety and care—it is much better to remove it by an operation which will produce a good, full, movable stump, and wear an artificial shell, which, if well fitted, will look better than a disfigured eye and possess quite as much vision. Such arguments rarely fail to produce pliable patients.

The location of the wound should have much to do with our advice either one way or the other, as injuries in the posterior portion of the eye back of the sclerocorneal junction or ciliary region are much less dangerous than those anterior to the ciliary zone, while the most dangerous traumas of all are situated directly in the ciliary region, under which conditions a gloomy prognosis must surely be entertained, as small wounds in this locality are as a rule far more dangerous than even large lacerated injuries in any other situation.

The giant and other magnets, while they have undoubtedly saved many eyes otherwise unsavable, have, I think, greatly increased the

danger of sympathetic ophthalmia, as through their mediumship many eyes are spared which may eventually become dangerous, which without the magnet would unquestionably have been removed. Do not misunderstand me as decrying the magnet, for which I have the greatest respect and which has saved more good eyes than it will ever lose, but I do believe that the unwise and unskilful use of the magnet by surgeons who regard it as merely a powerful machine by which steel, etc., can be forcibly extracted from an eye without regard to method has, must and will be responsible for many lamentable results in ocular surgery. If such surgeons would but read the writings of Haab, Hirschberg and others on this interesting subject, in which they deliberately regard this operation when properly performed as the most delicate and difficult in ocular surgery, they would, I am sure, entertain for it a profound respect and would not be so apt to regard it as a mere pulling contest. In this connection, however, I desire to say that I can not entirely subscribe to the teachings of these masters in ophthalmology when they so tenaciously adhere to the anterior avenue of steel removal. If the steel is visible in the anterior segment of the eye, or if it is a very small piece, it is, of course, best to gently draw it into the anterior chamber with the Haab magnet, before the cornea is opened, if possible, and then after the corneal section has been made to remove it with the large magnet or perhaps by a Hirschberg magnet, gently insinuated into the lips of the wound. But if the steel is in the posterior portion of the eye, or is of large size, I believe it is far better to make a proper incision through the sclera, etc., as near the site of the projectile as possible and to draw it out backwards rather than to drag it over the sensitive and vital anatomical elements constituting the anterior segment of the eyeball. I am well aware that much danger lurks in either method and that detached retina and chorioid, hemorrhage, escape of vitreous, infection, etc., are to be feared if objects are withdrawn by the scleral opening. But these complications are, I think, less to be feared than will be the case if an effort is made to drag a jagged piece of metal over the ciliary body, around or through the lens, iris and cornea on to the point of a giant magnet, under which circumstances cyclitis and uveitis are greatly to be feared, together with cataract, infection, loss of vitreous, prolapse of iris, etc. For these reasons and others I can not endorse the generally accepted doctrine of almost invariably extracting steel by the anterior route, but feel that many cases will be best operated through the sclera, and believe that each case should be carefully studied by itself. I am also convinced that the best interests of patients is not always served by extracting large pieces of steel from an eye which has been badly mangled and injured past all claims to beauty or utility, and feel that many such eyes had better be enucleated at once, thus saving much time and money and avoiding the subsequent salvation of a sightless, atrophied stump, which must always remain a menace to the safety of the other eye.

It is commonly believed that the Haab magnet is an almost infallible guide as to the presence of steel, etc., within the ocular walls. While it is perhaps true that in a large majority of cases pain will be felt on

the approach of a large magnet to an eye containing steel or iron, this rule is not by any means invariable, as I have myself proven in several cases of enucleated eyeballs where the magnet had been repeatedly tried without eliciting the slightest pain. The piece of steel may be very small or it may be firmly retained in the inner scleral wall, or it may be encysted, under any of which circumstances the magnet may fail to produce pain and the surgeon may erroneously assume the absence of steel. Neither can the *x*-ray picture be relied upon to locate the presence of steel, etc., as I have seen several cases where the photographer found no steel where steel really existed, and at least two cases where he positively diagnosed the presence of steel in the eye where a subsequent enucleation for panophthalmitis clearly disproved his opinion. I would like also to correct a mistaken idea that wounds of the lens are always followed by cataract, as this notion is quite far removed from the truth. I have seen a number of cases where small foreign bodies have passed completely through the lens and dropped into the vitreous chamber, where the injury was only followed by a slight, localized opacity which, in some cases, practically disappeared, and I remember one case where I gently needled a lens for high myopia, hoping to produce a cataract, which was merely followed by a localized opacity where I had perforated the lens.

Before leaving this subject I desire to pay a tribute to a therapeutic remedy that has been my most potent ally in the salvation of many eyes that, I believe, would otherwise have been lost. I refer to the new silver preparations, and especially to argyrol and Credé's ointment. These remedies I have grown by experience to regard as almost indispensable in menacing ocular injuries. I first began using argyrol in the varying grades of purulent or mucopurulent conjunctivitis, and in cases of abraded or ulcerated cornea and also in infected conditions of the tear passages. It gave greater satisfaction than any drug I have ever used, and, while I do not regard it as invincible in such diseases, I am but rarely disappointed in its use. I then began using it in my operative work, and in cases of cataract, iridectomy, etc., I always endeavor to have a 25 per cent. solution of argyrol dropped into the eye several times a day for about two days before the operation, and since adding this to my other preparatory measures have never had a case of infection. Lately I have been dropping the solution over the field of operations, directly after the operation, in cataract and other bulbar operations, and have never had cause to regret it, and believe that it has played an important part in the production of good results. In cases where I have feared infection I have even allowed a little of the solution to run into the anterior chamber and have never been displeased with the results, as the dark staining wears away in a short time. In cases of severe ocular injury and after a magnet operation I used the solution freely, injecting it not only into the anterior chamber, but into the vitreous chamber, and believe that thereby I have saved many eyes.

I almost hesitate to confide to you my method of using Credé's ointment in dangerously infected eyes, where, perhaps, suppuration has already been firmly established, and yet it is the truth we should seek, and

I have seen such surprising results from the use of this preparation that I feel I should mention it in this paper, even though it is repugnant to our ideas of treating infected suppurating eyes. I usually care for these infected and perhaps suppurating ocular traumas in the orthodox manner; that is, by cold packs, antiseptic irrigation, atropin, argyrol, etc., during the day, but when night comes I direct that the eye be thoroughly cleansed, that argyrol and perhaps atropin be used and anything else done that seems advisable. A thick plaster or poultice of Credé's ointment is then spread upon a piece of gauze which is placed directly over the closed lids and secured in position by a soft bandage. This is allowed to remain all night and is removed in the morning for the resumption of the daily routine treatment. I have never regretted using the ointment, and have seen many eyes saved where such salvation seemed well nigh impossible. The amount of discharge is much lessened and it is surprising when the ointment is removed in the morning to see how clean the eye is and how the small amount of secretion has been drained from the eye to the ointment. I have even used this method of treatment in gonorrheal ophthalmia and have always been pleased with its effect. In addition to these remedies in all cases of severe eyeball injuries I invariably and promptly place my patient on large doses of salicylate of soda, endeavoring to follow the rule of Gifford of giving them in the twenty-four hours one grain of the drug to each pound of the patient; for instance, I give a man weighing 150 pounds 150 grains of the medicine. I am satisfied that I have seen good results from this plan, although it sometimes produces acute cerebral excitement, which necessitates a temporary suspension of the drug. In menacing cases of eyeball injuries I believe I have also seen good results from a few daily sweat-baths, and this has almost become a routine procedure in instances of this kind.

The space permitted for this paper is, of course, too brief for me to enter fully into the various orthodox methods of caring for ocular traumas, nor is it necessary or desirable, for these details are well understood by you all. I have simply endeavored to discuss with you some of the reason for endeavoring to save eyes and some of the indications for their removal. In addition to this, I have taken the liberty of setting forth to you some particular methods of dealing with important conditions which I have found by personal experience to be most efficacious.

In case it becomes necessary to remove an eyeball, it can best be removed by one of three operations:

First, by the old-fashioned Bonnet operation; second, by the Bonnet operation as modified by myself; third, by the Mules operation.

The original Bonnet operation is the quickest and easiest operation and is indicated where speed is necessary, as in patients who are expected to act badly under an anesthetic, and where the physical appearance is unessential, as in the very aged, etc. It leaves a marked deformity, as no effort is made to produce a movable stump, and a great hollow socket is acquired. My modification of this operation can be used in almost all cases, by which the muscles and conjunctiva are all drawn

together, thus filling in the socket and producing but little deformity and a freely movable stump, which moves the artificial shell in a most beautiful and natural manner. The Mules operation can be performed in selected cases where the physical appearance of the patient is of the utmost importance.

The Bonnet operation is performed as follows: After the insertion of a strong eye speculum, holding the lids firmly apart, the conjunctiva is grasped near the periphery of the cornea at any convenient place, and an opening is made with a pair of curved blunt-pointed scissors. This opening is continued around the cornea until it is completed. The underlying tissues are severed at all points by the scissors, to enable us to pick up and cut the four recti muscles close to their scleral attachments. I would advise you to sever the superior rectus muscle first, as the eye naturally turns up during anesthesia, and if muscles which antagonize the superior rectus are severed first the upward movement is accentuated, and the muscle is then difficult to reach. The superior rectus is first pulled down by a tenotomy hook, exposed and severed, after which the other recti muscles are severed. We do not attempt to find the oblique muscles, as they do not interfere with the expulsion of the globe, and are easily severed, together with the other loose tissue back of the eyeball. After incising the recti muscles the speculum is forced back into the socket, which crowds the eyeball forward, thus enabling us to easily find the optic nerve, which is now the only thing that firmly holds the globe in position. In searching for the optic nerve it is best to proceed from the nasal side of the socket, as it is more readily reached at this point; the two nerves originate at the central optic chiasm and gradually diverge as they pass forward to the eyeballs; thus the nerves are nearer the nasal than the temporal sides of the sockets. The eye should now be firmly grasped by a pair of strong forceps and pulled outward toward the temple, to bring the optic nerve forward as far as possible. An enucleation spoon is passed back into the socket, using the sclera as a guide, and the nerve engaged in the slot of the spoon. This instrument is shaped something like a spoon with the point ground off, and possesses a wide slot through its center which easily accommodates the optic nerve. By cutting the nerve back of the spoon we avoid cutting the sclera, an embarrassing accident which materially hampers the operation by evacuating the vitreous humor and collapsing the globe. After the nerve is engaged a strong pair of curved blunt scissors is introduced close to the sclera, the globe lifted out as far as possible with the spoon, and the nerve severed as far back as possible. The eyeball is then brought forward and all loose tissue, including the two oblique muscles, severed close to the globe, to preserve as much orbital tissue as possible. Some operators catch up the incised conjunctival circle with a purse-string suture; others find the muscles and include them in the sutures, together with the conjunctiva, while others leave the open wound to heal by granulation. If there is no pus in the socket, either of the two former procedures is advisable, as the healing is quicker and more stump mobility is produced; but if pus has been in the socket it is

better to dispense with the sutures. The sutures may be catgut, which need not be removed, or silk, which must be removed in four or five days. After cleaning the parts a bandage is applied and the patient kept quiet for three or four days, the bandage being changed each day and the socket thoroughly cleansed. The patient is usually discharged in about ten days.

It must not be supposed, however, that all enucleation operations can be performed after the ideal method just described. Various complications may embarrass the operation. The eyeball may collapse during the course of the operation, owing to deep corneal ulceration or a partially healed wound of the eyeball. Under such circumstances we must adhere to the essential steps of the operation as nearly as possible, picking up the collapsed sclera with strong forceps and stretching it firmly, to clearly display the site of each operative step; the globe must not be mangled, which would prove an additional embarrassment. Some operators under these circumstances transfix the eyeball with a strong, sharp hook and pull the globe out as far from the socket as the optic nerve will allow, and from side to side, as is necessary to facilitate the different steps of the operation. Others transfix the globe with a strong suture, with which to pull the eye from place to place; while others, who anticipate trouble of this nature, strengthen the weak spot in the eye by including it in a firmly tied suture before attempting the enucleation. The globe may be extensively cut or torn before the operation, with a complete collapse of the globe, rendering the work of its removal embarrassing. The same general directions as have been just given are applicable in such cases, only the difficulties are increased. The principal difficulty is in severing the hidden optic nerve without freely lacerating the globe or surrounding orbital tissue. This difficulty may be overcome by care and coolness, and by firmly pulling the collapsed eyeball away from the socket, and rotating it to one side so as to see as far back in the socket as possible, which procedure will often be rewarded by a fairly good view of the nerve itself, which will, of course, render further progress comparatively easy. Keep close to the sclera, using it as a guide, and employ the scissors in dissection.

Hemorrhage sometimes, though rarely, causes trouble. In exceptional instances it may be even necessary to tie an artery, although this has never occurred to me personally; indeed, in a somewhat extensive experience I have only seen hemorrhage which caused me a moment's anxiety. In case free bleeding occurs, it may usually be controlled by hot bichlorid solution or sterile suprarenal capsule solution or powder.

My modification of the Bonnet operation can be performed as follows: The conjunctiva is divided around the cornea, and as close to the corneal edge as possible, with a pair of curved blunt scissors. The conjunctiva is then raised at different points with forceps, and the scissors are used to freely separate the conjunctiva and capsule of Tenon from the globe. Commencing with the superior rectus, the rectus tendons are picked up upon a strabismus hook. Prince's advancement forceps are then substituted for the hook, which is removed, and made to firmly

hold the entire tendon within its grasp, by closing the fixation spring. The tendon is then cut close to the globe, and any posterior connections between the muscle and globe are likewise severed, so as to allow of free expulsion of the globe and a perfectly loose muscle. A needle and catgut suture are then passed in and out through the muscle tissue, at right angles to its fibers, the needle is removed, and the two catgut ends are allowed to hang until we wish to again pick up the muscle. The forceps are then removed. This procedure is repeated with all four recti muscles, after which the globe is removed as in the ordinary enucleation operation, the spoon and heavy curved scissors being accurately introduced between the globe and the muscles, when the optic nerve is to be severed, being very careful not to cut or injure the muscles during the manipulations. The hemorrhage stopped, the superior and inferior recti muscles are then picked up by the double-headed catgut sutures, brought together and firmly tied, and the loose ends of the sutures cut away. The same is done to the internal recti muscles. The conjunctiva is then picked up and quilted in and out by a needle and catgut suture a few millimeters from its circular cut edge, being careful to dip down and pick up each rectus muscle as it is passed. The suture is then tied and cut. The reaction is usually slight and easily controlled, if necessary, by iced bichlorid solution. The patient should remain in the hospital for about two weeks. This operation makes a movable stump upon which an artificial eye may rest. The socket is well filled, and comparatively little sinking of the lids is observable. Many operators believe that this or some other similar operation supplemented by improved artificial eyes, such as Snellen's, with thick bulging or convexed backs to fill in the cavity and produce close contact with the mobile stump, is destined to become the ideal method, and will entirely supplant all such procedures as Mules' and other similar operations. If this happy result ever materializes, better operations and better artificial eyes will have to be devised, although the operation just described yields desirable stumps.

The Mules operation was devised by Mr. Mules, of England, from whom its name was taken. The idea of the operation is to preserve the muscles and sclera intact, and by placing a hollow glass globe or artificial vitreous inside of the sclera permanently retain it there, producing a globular, prominent stump that will not allow of the shrinking and pinching of the sclera incident to an ordinary evisceration, which is thought to be largely responsible for the occurrence of sympathetic ophthalmia. The operation is performed as follows:

The ordinary circumcorneal incision of the conjunctiva is first made by the curved scissors, and the conjunctiva freely liberated from the sclera for a considerable distance back, in order to provide for a movable conjunctival flap. The anterior segment of the eye just back of the cornea, and well into the scleral tissue, is now transfixed by a Beers' or Graefe's cataract knife, or by any other suitable blade. The incision is completed upward or downward as the surgeon prefers, thus opening one-half of the anterior segment of the eyeball. The other half is now picked up with forceps and cut off by scissors, thus completely ampu-

tating the cornea. This leaves a large round opening in the eye, through which we remove the contents down to the sclera. This is done by a sharp scoop, aided from time to time by a mop of either gauze or cotton firmly twisted on a strong cotton-holder forceps or probe. I say strong, because this cleansing process should be thoroughly done, using more or less force, the object being to leave no fragments of chorioid or anything else attached to the inside of the sclera. Troublesome hemorrhage sometimes occurs during the curetting process, which may usually be controlled by a hot bichlorid solution. After the hemorrhage has practically ceased, the sclera should be prepared for the glass globe by mopping it out with a 95 per cent. solution of carbolic acid, after the method of Dr. A. E. Prince, of Springfield, Ill. The acid may be immediately neutralized by alcohol, although many surgeons omit the latter. In order to make the mouth of the scleral wound coapt evenly, a little wedge-shaped piece may be taken out at two opposite points. This enlargement of the circular aperture also permits of a readier introduction of a suitable sized glass ball. Six or eight hollow balls of various sizes should always be on hand at the operation. They should be sterilized by immersion in 95 per cent. solution of carbolic acid and alcohol, and are then allowed to float in a strong bichlorid solution (1:1000) in a covered bowl until ready for use. The original hollow glass globes devised by Mr. Mules are still popular, although various substitutes have been proposed. The glass globes, when well made, are smooth, light, permanent and strong, important features in such a device. Some surgeons have objected to them, fearing their easy breakage by blows, etc. I will drop this ball upon the stone floor and you will observe that it bounds again and again, and is not broken. I, therefore, regard their breakage in the cushioned socket as almost impossible, and I have never heard of a case where this accident occurred.

Great care should be used in the selection of a globe of proper size, bearing in mind that considerable reaction and swelling usually follow the operation, and that if the artificial vitreous is unduly large the sutures may give way and the globe be expelled, or it may become necessary, through excessive swelling and pain, to liberate the sutures and globe to relieve suffering and avert danger. Neither should we select a ball too small, because we desire to insert a globe sufficiently large to loosely fill the scleral sac, so that a prominent stump may be produced, capable of tolerably well filling the socket, and supporting the artificial eye to be later inserted. We should choose between two extremes and select a ball that readily slips into its place, allows ample scleral tissue for sutures, and permits the sclera to lie loosely around the glass shell.

Having selected the ball, it is taken from the antiseptic fluid, washing it thoroughly meanwhile, and placed in the scleral sac with the fingers, or an instrument especially devised for this purpose. The sclera should then be temporarily drawn over it to ascertain if it is of the proper size; if not, exchanges should be made until a satisfactory ball is found. The scleral sac and its glass contents are now thoroughly irrigated by a bichlorid solution (1:5000), the opening in the sclera being

expanded to permit free ingress of the fluid. The scleral opening is now brought together with strong but fine twisted black silk thread. Catgut sutures should not be used, as they are quickly absorbed and allow an expulsion of the ball. Black thread is better than white for obvious reasons. The scleral opening may be sutured either horizontally or vertically; the choice is immaterial, but I usually elect the vertical meridian and shall do so in this case. The sutures should be set well back into the scleral tissue, so that a firm hold may be obtained, this being a material aid in retaining the ball, in spite of the subsequent reaction. To the same end as many sutures should be inserted as can be conveniently placed in the opening. In twenty-seven cases I have never lost a ball, and I attribute my success to a rigid adherence to the last enumerated suggestions.

The sutures are cut off as close to the knot as is consistent with safety; these sutures are permanent, and they should, therefore, be made as small and unirritating as possible. The conjunctival sutures are now inserted in the opposite direction from the scleral sutures—that is, if the latter have been placed horizontally, the former should be placed vertically, etc. The conjunctival sutures may be of silk or catgut, and five or six are usually sufficient. They should be placed far back in the conjunctiva, in order to encourage a thorough healing at the central point, which is apt to open and expose the sclera, unless care is taken. If the sutures are silk, which I regard as best, they may be carefully cut away in six or seven days; if catgut, they will take care of themselves. The socket should now be thoroughly irrigated with bichlorid solution (1:5000), a pad of cotton applied over the closed lids and secured by a bandage, and the patient kept quietly in bed for several days. Both eyes should be bandaged, in order to keep the operated eye quiet and free from rotation, which would strain the sutures. After three or four days the well eye may be liberated. The eye should be inspected and irrigated each day, and upon the appearance of undue reaction iced bichlorid compresses should be substituted for the bandage, except at night, when the latter may be resumed. The patient should be kept quiet and under close observation for about two weeks, after which our care may be gradually lessened.

I think it unwise to insert an artificial shell for one month at least, as its adjustment and wearing may irritate the stump and open the conjunctival wound. The patient should only wear it occasionally at first, gradually habituating the socket to the artificial prothesis. It is usually quite difficult to secure a suitable shell for a Mules stump, as artificial eyes are generally manufactured for the old-fashioned empty socket, and are quite unadaptable for the prominent stump of the operation just described. It is frequently necessary to have an eye manufactured to order. When a satisfactory eye is obtained, however, the appearance is life-like. There is none of the sinking invariably present after the old operation, for the lids are well filled out and graceful in their outlines. The shell being brought in apposition to the mobile stump follows every movement of the other eye with promptness and

accuracy. The continual overflow of tears and mucus; and the repulsive drying of the same upon the surface of the shell so uniform with the old operation, is absent after a Mules operation, as the prothesis is pushed forward by the retained glass ball and brought into close contact with the lids, which allows the secretions to pass over the shell in a natural manner into the lacrimal passages. In fact, the results are so satisfactory and life-like that the patient really suffers very little, if any, deformity, and the surgeon who has once witnessed the undisguised pleasure of a few patients thus saved from lifelong mortification will find it difficult to accustom himself to other operations.

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HEBOSTEOTOMY COMPARED WITH OTHER PROCEDURES IN THE MANAGEMENT OF LABOR IN CONTRACTED PELVES.

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(Abstract.)

Hebosteotomy is a valuable addition to our obstetrical resources in the management of labor in contracted pelves with an anteroposterior diameter not under 7 cm. In higher grades of pelvic contraction Cesarean section is indicated. The maternal mortality is about the same in both operations, 4 to 5 per cent. The infant mortality in hebosteotomy is 7 per cent. and in Cesarean section 1 per cent. The conditions necessary to secure good results are, first, avoidance of improper attempts at delivery, especially high forceps; second, perfect asepsis of the obstetrical canal.

Contraindications for both hebosteotomy and Cesarean section are, first and chiefly, the presence of infection, either developed or seriously threatened. Here high forceps, version or perforation are necessary. Second, the refusal of the patient. Here we must consider also the prophylactic methods of delivery, namely, prophylactic version, and when possible induction of premature labor. Prophylactic version is valuable in flat pelves of moderate degree of contraction or with a small child.

Induction of premature labor gives good results, first, when it is done at the right time, as a rule not before the thirty-sixth week; second, when the pelvis is not too small, 7½ to 8 cm. conjugata vera; third, when the proper technic is chosen—(a) in flat pelves, dilatation with the metreurynter and prophylactic version, (b) in generally contracted pelves use bougie and wait for spontaneous labor.

Professor Pfannenstiel reports 50 cases of induction of premature labor in the last three years, with no maternal deaths and 98 per cent. of the children born alive and 82 per cent. of the living children discharged from hospital. Hebosteotomy should be done only by a specially prepared physician and when possible in a hospital.

The technic is as follows: On one side in the groove between the labium minus and labium majus an incision about 1½ cm. long parallel to the descending ramus of the pubes is made down to the bone. The soft parts, particularly the crus clitoridis and the soft parts lying behind the pubic bone, are separated partly with a bone elevator and partly with the fingers. Then a Bumm needle is introduced from below upward to the tubercle of the pubis, the saw attached, pulled through and the bone sawed through subcutaneously. Thereupon the small wounds below and above are closed with silkworm gut suture and the patient is delivered either by forceps, version or by foot extraction in breech presentation.

It is very important to protect the soft parts when divided bones separate and not allow this wound to communicate with wounds in the vagina. In a primipara with a narrow vagina, a perineovaginal incision on the same side as the bone incision is a good way to prevent extensive tears extending into the region of the bone lesions.

PUBLIC HEALTH LAWS IN ILLINOIS.*

HENRY B. HEMENWAY, A.M., M.D.
EVANSTON, ILL.

The present status of the public health service in Illinois is very far from satisfactory. Looking the subject squarely in the face, it must be admitted that much of the blame for the present condition of affairs may be justly laid up against the ignorance and carelessness of the medical profession. A layman, who has been long in official life, in speaking of a certain medical officer, said: "You can not expect a man to neglect his private work all the time for the pittance which is paid in that office. If the physicians of the community should make a united protest, a salary would be allowed which would be more adequate. The fact is that, for some reason, it may," he said, "be personal jealousy, the physicians of the community have never unitedly spoken on the subject."

Public health work is to-day almost a profession by itself. Columbia University is now preparing to establish a special course in this line of education. In addition to special knowledge, it requires the education and training of a practitioner of medicine. The health official should have had years of practical experience as a physician. On the other hand, there is little which a physician may learn in this public service which could help him financially in private practice. His public duty is to prevent sickness, and, if he is successful, that fact would tend to decrease the amount of practice in the cure of disease. In this country private practitioners are paid only for the treatment of disease, not for its prevention. With practically no exceptions, physicians who devote their time and training to public health work are underpaid.

Every health official of a community of ten thousand or more population should be paid a salary which will permit him to devote his whole time to public health work. While he should have had the training of

* Read at the Evanston Branch, Chicago Medical Society, June 25, 1908.

general practice, he should not continue in such practice. No man can successfully attend to both of these branches at the same time. The practitioner must be constantly prejudiced in his official duties, and he spends time in the study of therapeusis which should be given to original investigation and to the science of epidemiology. Public lectures, or school instruction in public sanitation, are a legitimate field for official use of extra time. It is quite possible that such teaching would improve the administration not only by gaining the sympathy of the people, but more by the education of the official. It is a poor teacher, indeed, who does not learn by attempting to impart his knowledge to others.

Neither is there in Illinois an incentive to good work in the hope of advancement. With different laws a man might be willing to do efficient service in a smaller city, in the hope that, having made a reputation, he would be called to a larger place. Chapter 24, Article VI, Section 6, of the Illinois Statutes says: "No person shall be eligible to any office who is not a qualified elector of the city or village, and who shall not have resided therein at least one year next preceding his election or appointment. Nor shall any person be eligible to any office who is a defaulter to the corporation: Provided, however, this shall not apply to the appointment or election of city engineer in incorporated cities and villages; and provided that the same shall not apply to appointment of attorneys in incorporated villages, if such appointee be not a defaulter to the corporation." This law should be amended at the next session of the legislature by striking out all that portion following the words, "Provided, however, this act shall not apply to the appointment or election," and substituting therefor the words, "to any such an office in an incorporated city or village as shall require a special or technical education or training, if such appointee be not a defaulter to the corporation." As it now stands it is doubtful if it be not unconstitutional as class legislation.

It must be evident to every thinking man that there is less excuse for making an exception of attorneys than for excepting sanitary officers. A large proportion of lawyers are well posted on corporation law, whereas very few physicians know much of public sanitation. The statutory exception should be general. There may be a decided advantage in importing the head of a police or fire department for a small city. That is practically the only way in which a poor department may be brought up to standard. If the public services of physicians are underpaid in comparison with other lines, the private practice of the members of the profession will be equally undervalued. It takes a better education and a more extended training to be a good city commissioner of health than to be an equally good corporation counsel, but the city of Evanston, for example, pays annually $3,300 for attorneys' services and only $600 for a commissioner of health. Is human life and health of so little value in comparison with dollars that the community is willing to run needless risks of disease to safeguard a possible loss of money?

The laws of Illinois do not compel a city to have a department of health. The city has the power, according to Chapter 24, Article VI, Section 2, to appoint or elect a commissioner of health, but it is not obliged to do so. In the same chapter, Article V, Section 1, Paragraph

76 says that the city council shall have the power to appoint a board of health and prescribe its duties, but it does not make obligatory upon the city the election or appointment of any sort of a department of health.

Turning now to the larger community, we find that the laws in no way favor an efficient state health administration. Chapter 126a, Section 1, says: "That the governor, with the advice and consent of the senate, shall appoint seven persons who shall constitute the board of health." There is nothing in this, or in any other section, which in any way suggests that any member of this board should have the education of a physician. In the past the board has not been composed entirely of physicians. Another section says that the secretary of the board shall be the executive officer of the board, but even he need not in any way have any knowledge of medicine or of sanitary science. There is nothing in the statutes of the state to prevent the appointment of a board composed entirely of Christian Scientists, osteopaths and veterinary surgeons. Such a possibility does not seem so remote when we remember the dire consequences during our war with Spain of the appointment of a veterinary practitioner as a corps surgeon over experienced physicians and surgeons. During the recent meeting of the American Academy of Medicine members from New York and California expressed the greatest surprise that any state should be so far behind the times as to have the state board of health also the examining board for license to practice medicine, yet this is the case in Illinois to-day. We can not have an efficient health service without properly guarding the practice of medicine.

The American Academy of Medicine has a committee which is attempting to get uniform laws in the several states governing the practice of medicine. During the discussion of their proposed law, a representative of the Illinois State Board of Health opposed the section which provided that the governor should appoint members of the examining board from a list proposed by the incorporated state medical societies. He said that in Illinois such a law would be unconstitutional and it would also be an insult to the governor. Why a man in his position should publicly make so erroneous a statement is beyond comprehension. Like many other dicta of the present board, this statement was made *ex cathedra,* as it were, without attempting to give any evidence or citing any case in support of his statement. Chapter 91, Section 27, provides that: "The governor, with the advice and consent of the senate, shall appoint five persons from among such competent registered pharmacists in the state as have had ten years' practical experience in the dispensing of physicians' prescriptions, and who are actively engaged in the practice of their profession, who shall constitute the board of pharmacy." It further provides that one new member shall be appointed annually, and the section closes with these words: "The Illinois Pharmaceutical Association shall annually report directly to the governor, recommending the names of at least three persons whom said association shall deem best qualified to fill any vacancies which shall occur in said board." This law

has never been shown unconstitutional, nor is there any evidence that it has been considered an insult to the governor.

Sections 10 and 11 of the Constitution provides for appointments by the governor, and Section 12 says: "The governor shall have power to remove any officer whom he may appoint," . . . "and he may declare his office vacant and fill the same as herein provided in other cases of vacancy," but there is nothing in the Constitution which in any way prohibits the legislature from determining what shall be the qualification of any officer. The present laws do specify that dentists, nurses, pharmacists and veterinary surgeons shall compose the boards regulating the practice of their respective branches; but the practice of medicine, the examination to determine the qualifications of candidates for the care of human lives, shall be managed by a board of *seven persons!* Suppose for one minute that a devotee of the cult of Christian Science should be elected to the office of governor! What is to prevent his removal of the present board and the appointment of seven persons to his liking? The practice of law has long been regulated by the legal profession. It is true that the Illinois Statutes do not specify that judges must be selected from practitioners of law, but usage now has the force of law, and a statute requiring such a qualification is common in many states.

The present law regulating the practice of medicine is not designed to give the best results for the people, and it is an insult to the medical profession. Physicians must be the best judges of the qualifications of a medical board, as pharmacists are best qualified to select a board of pharmacy. Free trade, local option and municipal or governmental ownership of corporations should have nothing to do with the selection of a board regulating the practice of medicine, nor with the board of health. Men should be selected for these positions only on account of their professional qualifications, not for their ability to control votes, or work out the schemes of designing political tricksters. It must be remembered that not very long ago a layman was appointed commissioner of health in Chicago solely on account of his ability as a ward politician. It is not to be expected that a board which exists through political pull will have an eye single to the scientific work of the office.

The Illinois State Medical Society, at its last meeting, recommended that a state commissioner of health should be appointed, and every man desiring an efficient service should use his influence to that end. Such an officer should be removed as far as possible from political sway. He should be aided by qualified advisers, and, if need be, all the laws of the state should be revised to make them harmonious. For example, Chapter 24, Paragraph 500, provides that in cities of 5,000 or more inhabitants no person shall be engaged in plumbing who shall not have received a certificate after an examination by a board of three members, one of whom shall be the chairman of the board of health of the city; yet, as previously stated, there is at present no law compelling the appointment of a board of health, and in point of fact in Evanston there is no board of health.

It may not be out of place here to suggest very briefly a scheme for new legislation in place of the present system.

1. The state law should compel the appointment of a commissioner of health for every incorporated city or village, and for every county in the state, providing that the commissioner of the county seat shall be the county commissioner of health. The qualifications for such commissioners should be professional only, and previous residence outside of the county, or even state, should be no bar. As far as possible such offices should be permanent. Ultimately it will be necessary that only those who have passed a special examination in sanitary science should be eligible to such appointment.

2. The governor, with the advice and consent of the senate, should appoint a state commissioner of health for a period of four years. Such appointment should be made from a list of three physicians recommended for that position by the incorporated state medical societies; and it should be the duty of each such society to make such recommendations annually to provide for emergency appointments.

3. Examinations for license to practice medicine, surgery or midwifery should be conducted by a board of physicians appointed by the governor from lists recommended by the incorporated state medical societies; and the same board should control the registration of nurses and the license of embalmers. No examiner should be connected with the teaching force of any college.

4. The "Board" idea must be abandoned. Some one must be made responsible. The Commissioner of Health should be empowered to appoint a competent chemist, a bacteriologist, a veterinarian and other necessary assistants, and the enforcement of the pure food law should be under the supervision of the commissioner of health. One chemist or bacteriologist may do work for all portions of the department. The outbreak of scarlet fever in 1907 was an illustration of the unsatisfactory results of the present system. It should have received the immediate and harmonious investigation of the pure food, veterinary, medical and bacteriological branches. As it was, each probably fearing that he might encroach upon the field of others, no portion of the investigation was thoroughly made.

5. Violations of the various practice acts should be by either the Department of Justice or by the Department of Health, not by the license boards. All county and city commissioners should be subject to the jurisdiction of the state commissioner and should render weekly reports to the state office.

It might be objected that the pure food commissioner should be equal in rank and power to the commissioner of health. Such equality does not seem best, nor does it agree with the present laws. Chapter 126a, Section 2, provides that the state board of health shall have the general supervision of the interests of the health and lives of the people of the state. They may make such rules and regulations and such sanitary investigations as they may deem necessary for the preservation and improvement of the public health, and all officers of the state, county and

city must aid them. Chapter 127b, Section 4, makes it the duty of the pure food commissioner "to enforce all laws that now exist, or that may hereafter be enacted in this state regarding the production, manufacture or sale of dairy products, or adulterations of any article of food." The law provides for the collection and chemical analysis of foods, and Section 7 specially provides "the state board of health may submit to the commissioner, or to any of his assistants, samples of food or drink for examination or analysis, and shall receive special reports, showing the result of such examination or analysis." At present, therefore, it will appear that the pure food commissioner is subordinate to the board of health. With proper officers this condition need not hamper the pure food commissioner in the discharge of his ordinary duties, and it fixes responsibility.

It is perhaps questionable whether the present statutes sufficiently guard against bacterial infection of milk. Tubercular cattle may not to-day be imported into Minnesota or Wisconsin, but they are legally imported into Illinois. The people must be educated to the danger produced by the presence of the large number of these diseased cattle in the state, and this education must be given by physicians.

The registration of vital statistics should be more complete, and should be entirely under the supervision of the health service of the city, county and state. Most physicians are not aware that Illinois is not one of the states whose mortuary records are accepted by the bureau of vital statistics in Washington. The chief statistician at Washington, backed by committees from the American Medical Association and other bodies, will ask the next legislature to enact a more efficient law than the present one. The present law (Chapter 126r, Sec. 22) makes it the duty of every physician practicing in the state to report the death of a patient to the state board of health within thirty days, and (Section 31) provides a penalty in case of neglect to do so, and the penalty is a fine of from ten to one hundred dollars, or imprisonment, or both.

Accurate statistics must be the basis of good sanitation. The sooner that physicians come to realize that the registration of birth and death certificates is a matter of moral, as well as legal, duty the better. The point is well made by the Indiana state board that the physician who attends a confinement has not fulfilled his duty to his patient, for which the patient has paid him, until he has registered the necessary facts by which the child might later prove heirship or legitimacy. The present law, though imperfect, is mandatory. The rendering of birth and death certificates is not a voluntary matter, except as it has been made so by the state board of health.

The above discussion, though far from complete, serves to show that our present state laws relative to sanitation are incomplete and unsatisfactory. Illinois is not prepared to take proper rank with her sister states in the proposed National Department of Health. If we can not set our own house in order, we need expect little influence in the greater work. It is the duty of every physician to assist our local and state committees on legislation to secure the needed changes.

ILLINOIS MEDICAL JOURNAL

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AUGUST, 1908.

ADJUSTMENT OF FEES.

Recently a prominent general practitioner in one of the larger cities of our state read a paper before his county society, in which he complained of the loss which the general practitioner sustains when he refers a case to the surgeon or other specialist. The paper excited considerable discussion, which was rather heated in some of its phases. By some the author was denounced as bidding directly for a commission and by others was defended as standing for a plain injustice which was constantly being done to the family physician. We only mention this occurrence to call attention to an under current of dissatisfaction which exists in all of our communities and which has been especially emphasized during the financial depression of the past nine months. Various reasons have been given to account for this dissatisfaction and various more or less vicious methods have been devised to try to overcome it. We have talked with quite a number of prominent surgeons throughout the state and find that numerous methods are in vogue in an effort to overcome the dissatisfaction which the general practitioner is inclined to attribute to them. Some are said to be offering commissions on cases referred, while others will not pay commissions, but give their friends liberal and frequent presents. Others insist upon the general practitioner becoming an assistant at each operation, for which they allow a liberal fee. Some allow

the general practitioner to collect all fees and give to the surgeon a moderate amount for the operation, leaving to his judgment the desirability of collecting enough in addition to make a substantial residue for the general practitioner. Others follow a plan of cooperation or patent partnership by which the general practitioner transacts all the business with the patient and turns over to the surgeon an amount agreed upon between them. All such plans are more or less objectionable and belittling to members of a great and humanitarian profession and fall far short of the real difficulty. Each one is worthy of his hire and each should be paid fully in proportiion to services rendered. There is no doubt that the general practitioner who is giving his patients the best there is in modern medical service is too frequently not getting sufficient remuneration. During the past twenty-five years the cost of living and doing the business of the general practice of medicine has almost if not quite doubled, and competition in practice has greatly increased, while in many localities physicians are charging according to fee bills adopted twenty to thirty years ago. It seems to us that the general practitioner, as we see him in the state at large, has failed to keep his fees and business methods in harmony with the increased demands of living and doing business. The vital question with him should be, how he can increase his remuneration. In addition to the points mentioned, he has been encroached upon by lodge practice, club practice, reduced insurance fees and various other practice. It seems essential that the fees of the general practitioner should be increased at least 30 per cent. in many localities in order to meet the changed conditions, and to this end our organizations should give these questions careful consideration. They should do everything within their power to discourage lodge practice, club practice and insufficient fees and should enter upon a campaign of education to teach the physician how he can get more out of his daily work and teach the public that they are paying an inadequate amount for the services of a modern up-to-date family physician. There are hundreds, even thousands, of physicians who are charging nothing for their diagnostic ability and on whose books no charge can be found for making a diagnosis and rendering an opinion. Office consultations and home visits are charged for at minimum rates and the examination and diagnosis are thrown in. In our opinion, the great mass of our general practitioners are practically saying to their patients, "Examination and diagnosis free." This is certainly one place where the general practitioner should make a radical change in his method of transacting business. He should give his patrons to understand that the most important service which he performs for them is the making of a thorough examination and arriving at a correct diagnosis on which to base a valuable opinion, and he should never neglect to charge a separate fee for this service which should be commensurate with the importance of the case. If each one charged and received a good and adequate fee for the examination and diagnosis on which he based his opinion and advice that a surgical operation was necessary he would not feel so aggrieved when he saw his brother surgeon receive a good and adequate fee for the operation. If this plan

was pursued by the general practitioner as it is by the specialist, he would see on his books almost every day a separate fee of $5 to $25 for this very important, distinct and separate service, and at the end of the year he would find his income substantially increased, not to say anything of the great satisfaction from these more careful and painstaking investigations, instead of hurrying from door to door and counting his day's business by the number of visits he has made or the number of patients who have visited his office. To thoroughly and completely examine one patient is worth more (dollars) to that patient than twenty hurried visits are to twenty patients. In addition to this, it has been suggested, and we believe with some degree of justice, that such diseases as typhoid fever, pneumonia, scarlet fever and the like should not be charged by the visit alone. To carry a patient safely through such a disease is worthy of a separate fee not to be estimated simply by visits and bottles and boxes. If it is worth $200 to $500 for a surgeon to successfully treat a case of appendicitis is it worth less for a general practitioner to successfully treat a case of typhoid fever, or is it a matter of any real importance to the patient whether the doctor makes ten or forty visits as long as he makes all which are necessary to attend the case properly?

A NEW ORGANIZATION.

The physicians of the state have recently received a letter signed by the secretary of the Physicians' League of Illinois asking them to become members of a new organization. The reason for the existence of the league, as set forth in the circular letter, is on account of "the lack of harmony among physicians as at present organized. Its desire is to obtain for the doctors more stable recognition before the next legislature in regard to important medical legislation, namely, the desirability of a medical department in connection with the University of Illinois; second, the desirability of an epileptic colony; third, hospital for incurables; fourth, the question of improvement of the present system of the State Board of Charities; fifth, state control of tuberculosis."

The right of any body of men to organize for any legitimate purpose can not reasonably be questioned. The wisdom or necessity of the proposed organization of the Physicians' League of Illinois may well be, in view of the fact that it is the function of the state society to do the very things advocated by the proposed league. Their success can only result in one of two things—displacing the state society, or working in opposition to or at cross purposes with the profession as at present organized. The statement that there is a lack of harmony among physicians is misleading and not in accordance with the facts, if we are to understand that reference is made to the state society. This society never was so well organized or more harmonious than at present. The results achieved in the way of legislation, while not as great as might be desired, have been as successful as could reasonably be expected. The numerous inquiries received from physicians throughout the state indicate that

the profession generally question the sincerity of the movement and all regard it as unnecessary and ill-advised. Members of the Illinois State Medical Society will do well to withhold their support of the proposed league pending further investigation.

PUBLIC LECTURES CONDUCTED UNDER THE AUSPICES OF THE COUNTY SOCIETY.

Dr. William L. Baum, in his presidential address to the House of Delegates at the Peoria meeting of the Illinois State Medical Society, incorporated a recommendation that the county organizations "institute a series of public lectures on subjects pertaining to matters of public interest and in which the medical profession alone is competent to give instruction." In the July issue we published Dr. Baum's address (page 1). Dr. Baum states: "The public stands in need of such instruction and is eager to receive it. The dangers and the prophylaxis of contagious diseases, public sanitation, the milk problem, the management and treatment of tuberculosis, and many other topics may be selected for discussion. It might be well for the society to submit to the county organizations a lecture schedule, the lectures to be delivered by physicians resident in the county and also non-resident. I would recommend the appointment of a committee to consider this subject and present a plan for the consideration of the membership."

The Chicago Medical Society has already conducted public lectures for the past year and a half. These lectures have met with very great success and have been the means of disseminating knowledge among the people regarding the rules and regulations of public health that have materially aided the Department of Health in combating and eliminating contagious and infectious diseases. We dare not forecast the possibilities for the public health which will be obtained when the people will cooperate more fully with the medical profession in the control of infectious diseases. The stamping out of preventable diseases can not be accomplished without the support of the people. Just as the family physician has been, and always will be, the closest advisor of the family in matters of domestic health, so will he be the teacher of his families in matters relative to the control of those diseases which are communicated by contact.

The recommendation of Dr. Baum to establish courses of public lectures, under the auspices of the various county societies, marks a new era in the progress of medicine in the State of Illinois. We believe, with Dr. Baum, that these lectures should be largely given by the local profession in each community. There is no locality but what contains several men, at least, who will be able to give a paper of interest and instruction to the laymen, and it is right that this means should be used. The community in which these men live will hold them in greater respect and it will aid them in their own work. We are sanguine in our hopes that the committee which has the matter of public lectures in hand will accomplish a great work during this coming year. Your JOURNAL stands ready to do anything that it can to further this work.

DOES A DOCTOR'S VACATION PAY?

This season of the year brings a general relaxation in commercial lines and freedom from certain diseases due to inclement weather. Opportunity is given the physician to cease his vigorous activities and ponder over the many cases he has been permitted to attend in the last twelve months. This year has brought to our state not only our regular meeting of the Illinois State Medical Society, but likewise the annual gathering of the American Medical Association. Not a few physicians throughout the state have taken advantage of one or both of these conventions to get away from their regular routine work and to rub elbows with their confrères. We have written previously of the benefit derived from such gatherings, but, after all, the doctor is not getting away from shop talk. Large commercial enterprises have recognized the necessity of a complete relaxation from business in providing vacations for their employés. Constant application twelve months out of the year in the same line of work without any cessation tends to mental fatigue, biased judgment and intolerable disposition. A complete change from any line of work or thought to attractions that appeal to the social nature of an individual is productive of renewed energy, new thoughts and better judgment in his chosen occupation. A recreation for mind and body is important to a physician's life the same as in any other vocation. Some one has rightly said that an individual never comes out of a cold plunge with the same thoughts that he had when he went in. This is an axiom in the vacation problem. Now that business is dull, arrange with your neighbor to take care of your work while you are away, and in return for which you will relieve him that he may likewise be free for some weeks during the summer months. You will both be refreshed and bring to your clientele bodily vigor and keener thoughts.

EDITORIAL CORRESPONDENCE.

T. S. S., "POTSDAM," June 27, 1908.

To the Editor:—My first stopping place, after leaving Springfield for a summer trip to Europe, was Columbus, Ohio, where a visit over Sunday was made with my old college mate, Hon. L. B. Kauffman, formerly Commissioner of Public Works of that city. During his term of office Mr. Kauffman inaugurated the plan for adequate water supply and has always retained an interest in the matter. We visited the dam of the Scioto River, where storage of two billion gallons of water has been secured, and a much greater storage can be obtained by raising the dam 20 feet. This water is to be cleansed and softened before passing into the service pipes. All the sewage of the city is passed through septic tanks and sand filters before it is discharged into the river below the city. Columbus is, therefore, doing its full duty to its own citizens and its neighbors by protecting the health of both. It differs from some cities in Illinois in this respect. The cost of this undertaking will be $6,000,000, which, for a city of 200,000, is no inconsiderable sum. Columbus is the home of Peruna, and we are gratified to learn the report

that the crusade against proprietaries is said to have had the effect of largely reducing the sale of this one. The traffic in all these preparations has fallen off, we are told, nearly 50 per cent. A continuation of the crusade will result in putting them almost entirely out of business.

New York was next visited, and while there doleful tales of distress among young practitioners of medicine were heard. Uncomplimentary remarks were also heard regarding the methods pursued by several large schools in the metropolis. It seems high time for diminution of the number of graduates and more stringent supervision of medical schools. The future medical center of America is certain to be that city which is located in a state absolutely requiring high standards of admission, teaching and graduation. We must also begin a campaign among practitioners to induce them to recommend to future medical students only those schools giving an actual medical education. Too many men make a great outcry about the overcrowding of the profession and immediately proceed to send their students to the cheapest and most inferior schools.

Our ship was boarded at Hoboken Tuesday evening, June 16, and early Wednesday morning we were on our way for a pleasant sea voyage. Dr. Bowcock has proven a willing contributor to the treasures of the deep, but, since he has become accustomed to the motion, is enjoying himself. One of our fellow passengers is Dr. C. L. Ill, of Newark, N. J., who has informed me of a treatment for puerperal sepsis which appears reasonable and should be widely known. It seems the treatment is adapted to all cases of sepsis that have not passed beyond the uterus. Curettement is absolutely contraindicated. If necessary the uterus is irrigated with a mild bichlorid solution in gentlest possible manner and with low pressure. A stomach tube is then inserted to the fundus, and around this iodoform gauze is carefully packed to the full capacity of the uterus without compressing the tube. The vagina is also carefully packed with iodoform gauze, and the long end of the tube, wrapped in a sterile towel, is laid on the abdomen. When the packing is completed and every two hours thereafter, two ounces of a 10 per cent. solution of alcohol in sterile water is poured into the tube. The alcohol is antiseptic and the gauze acts as a drain. The tube and gauze are left in place three days. It may be necessary to insert a second packing of gauze. Dr. Ill reports that the results of this treatment have been very gratifying, and we hope it will be tried by our readers and reports made as to results.

In conclusion, I may say that we expect to spend three weeks in Heidelberg and may there find material for another letter.

Yours fraternally,

GEORGE N. KREIDER.

ABSTRACT OF THE PROCEEDINGS OF THE FIFTY-NINTH ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION.

The fifty-ninth annual session of the American Medical Association was held in Chicago June 2 to 5. For the first time since the St. Paul meeting, in 1901, the association met in the center of the country. To

this fact, as well as to the greatly increased membership in the last few years, is due the large attendance. The registration office opened at 8:30 on Monday morning, and it was apparent almost from the start that all previous records of attendance would be broken. In the four days of the session 6,447 members were registered. Including those Chicago members who did not register, there were at least 500 in attendance whose names do not appear on the registration list. The actual attendance would not fall far short of 7,000. Adding at least 10,000 guests, exhibitors, etc., makes the actual number of persons in attendance about 17,000. The weather was of that well-nigh perfect brand that Chicago can exhibit at times, being bright and clear, yet pleasantly cool and bracing. The general headquarters and registration offices were located in the First Regiment Armory, at Sixteenth Street and Michigan Avenue, where were also found the sections on stomatology and pathology and physiology, as well as the House of Delegates, commercial exhibit, scientific exhibit, etc. This building, one of the finest National Guard armories in the country, served admirably for convention purposes. The meeting places for the other ten sections were the First and Second Presbyterian churches, Sinai Temple, the Calumet Club and Grace Church parish-house, all within a few blocks of the general headquarters, and the Orchestra Hall in the downtown district, in which the Section on Surgery and Anatomy met. This hall, one of the handsomest auditoriums in the city, seats 2,500, and was supposed to be ample for the meetings of this section, yet it was on several occasions inadequate, being crowded to the doors.

The House of Delegates was called to order on Monday morning at 10 o'clock by the president, Dr. Joseph D. Bryant, of New York, who, in his presidential address, commended the work of the Council on Pharmacy and Chemistry, as well as that done by Dr. McCormack in educating the public. He also recommended that a standing committee be established to elaborate the ethical principles underlying the practice of medicine, and that general instruction in ethical medicine be made a part of the undergraduate course. He dwelt particularly on the efforts now being made to restrict animal experimentation and recommended action by the House of Delegates on this subject. Dr. Bryant also called attention to the invitation extended by President Roosevelt to him as president of the American Medical Association to take part in the conference recently held at Washington on the conservation of natural resources.

The report of the General Secretary showed that the membership of the association on May 1, 1908, was 31,343, a net gain for the past year of 3,828. The reports received from state associations regarding the organization of branch associations showed that two states had voted in favor of their establishment, seven had voted against, and the remainder had at the time of the publication of the report taken no action. The appointment of a committee to consider uniform provisions for the regulation of county, state and American Medical Association membership was recommended. A communication was presented from the

secretary of the American Association for the Advancement of Science asking that the American Medical Association appoint representatives to the council of that body.

The report of the Board of Trustees included the customary report from the auditing company, showing that the entire business for the fiscal year of 1907 was $385,030.89; that the total expenditures of the year had amounted to $356,222.21, leaving a net revenue for the year of $28,808.68. Detailed statements of all the various accounts of the association's business were given, showing the items in each case. The report showed that, during 1907, 2,715,293 copies of *The Journal* had been issued, forming a weekly average of 52,217, an increase of 12½ per cent. over 1906.

The Committee on Medical Legislation reported that the army medical reorganization bill and the Carroll-Lazear pension bills had become laws during the last session of congress. The importance of uniform and adequate state legislation on the practice of medicine and the preservation of public health was emphasized, as well as the necessity of careful study of the problems involved. The committee recommended that, pending the completion of the work now being done, only those changes in existing laws which are imperatively needed should be attempted by state associations. The formulation of the vital statistics bill, endorsed by the United States Census Department, the American Public Health Association, the Conference on Uniform State Laws of the American Bar Association, and the American Statistical Association, was reported and the endorsement of the House of Delegates was asked for this measure. The report of the Chicago Conference on Medical Legislation was also given.

The Council on Medical Education reported that the work of the council during the past year had been along the following lines:

1. The inspection and classification of medical colleges as (a) acceptable, (b) doubtful and (c) unsatisfactory.

2. The conducting of an annual conference with representatives of state examining boards and leading educators for the discussion of the important problems of medical education and medical licensure.

3. The collection and compilation of data regarding (a) medical college students and graduates and (b) regarding results of state license examinations.

4. A thorough investigation of preliminary and medical education in Europe.

5. Working for the advancement of the requirement of preliminary education in the United States to include a year's work in physics, chemistry, biology and modern languages.

6. Obtaining accurate information regarding high schools and universities in their relation to medical education.

The Board of Public Instruction reported that it had secured a secretary, Dr. R. Max Goepp, of Philadelphia, and that it was considering the establishment of lecture systems and of state boards of public

instruction and intended to publish articles in the magazines and public press for the enlightenment of the public on disease.

The Committee on Ophthalmia Neonatorum advised the enactment of laws in each state regarding the registration of births and placing the control of midwives in the hands of the boards of health; that health boards distribute circulars to midwives and mothers on the dangers and prophylaxis of this disease; that state and local boards of health prepare and distribute proper prophylactic solutions with specific directions for their use; that proper records be maintained in all hospitals in which children are born; that periodic reports be made by all physicians to boards of health; that concerted effort be made along the lines of public education throughout the country. This report was approved by the chairmen of the Sections on Ophthalmology, Obstetrics and Diseases of Women and Hygiene and Sanitary Science.

The Committee on Scientific Research recommended the appropriation of $200 for the assistance of each of the following:

Drs. D. J. McCarthy and M. K. Myers, Philadelphia, "An Experimental Study of Cerebral Thrombosis."

Dr. Karl Voegtlin, Baltimore, "Chemistry of the Parathyroid Glands."

Dr. Isabel Herb, Chicago, "A Study of the Etiology of Mumps."

Drs. R. M. Pearce, Albany, N. Y., H. C. Jackson and A. W. Elting, "A Study of the Elimination of Inorganic Salts in a Case of Chronic Universal Edema of Unknown Etiology with Apparent Recovery."

Dr. H. T. Ricketts, Chicago, "An Investigation of the Identity of the Rocky Mountain Fever of Idaho with That Found in Western Montana."

On Tuesday afternoon, at the third meeting of the House, the reports of the reference committees were taken up, the Reference Committee on Medical Education approving the work of the Council on Medical Education and recommending that it be continued. The Reference Committee on Reports of Officers recommended the appointment of a committee of five to consider the elaboration of the Principles of Ethics. Resolutions condemning the legislative efforts to restrict animal experimentation were presented. The action of the Board of Trustees in preparing the second edition of the Directory was approved. The Reference Committee on Legislation and Political Action recommended the approval of the model law for vital statistics, which recommendation was adopted. The resolution presented by Dr. A. T. McCormack, of Kentucky, requesting all state associations publishing or controlling medical journals to restrict advertisements to such preparations as were approved by the Council on Pharmacy and Chemistry was adopted. A committee of three to confer with a like committee from the American Pharmaceutical Association in regard to drug reforms was authorized. The candidacy of Dr. C. A. L. Reed, of Cincinnati, for the United States Senate was endorsed.

On Thursday afternoon the annual election took place, with the following results: President, Dr. William C. Gorgas, Ancon, Panama;

first vice-president, Dr. Thomas Jefferson Murray, Butte, Mont.; second vice-president, Dr. John A. Hatchett, El Reno, Okla.; third vice-president, Dr. Thomas A. Woodruff, Chicago, Ill.; fourth vice-president, Dr. E. N. Hall, Woodburn, Ky.; general secretary, Dr. George H. Simmons, Chicago, Ill. (re-elected); treasurer, Dr. Frank Billings, Chicago, Ill. (re-elected); trustees to serve until 1911, Dr. Wisner R. Townsend, New York; Dr. Philip Mills Jones, San Francisco; Dr. William T. Sarles, Sparta, Wis.

The following nominations were made by the President and confirmed by the House of Delegates: Committee on Medical Legislation, Dr. Charles Harrington, Boston, Mass., to serve until 1911; Council on Medical Education, Dr. Victor C. Vaughan, Ann Arbor, Mich., to serve until 1913; Committee on Transportation and Place of Session, Dr. M. L. Harris, Chicago, chairman, for three years.

The following were elected honorary members: Dr. Edward F. Schaefer, Edinburgh, Scotland; Dr. August Martin, Griefswald, Germany; Dr. E. Treacher Collins, London, England.

The Committee on Awards reported the following awards in accordance with the report of the Committee on Scientific Exhibit: Dr. H. T. Ricketts, gold medal for research exhibit on tick fever; Dr. Fenton B. Turck, diploma for exhibit illustrating pathology of peptic ulcer; Northwestern University Medical Department, diploma for teaching exhibit, illustrating morbid anatomy; Rush Medical College, diploma for teaching exhibit, illustrating morbid anatomy; Dr. Charles H. Beard, diploma for exhibit of drawings of the human eyeground; Dr. Maximilian Herzog, diploma for exhibit, illustrating early human embryology; St. Mary's Hospital, Rochester, Minn., diploma for clinical and pathologic exhibit of stereoscopic photographs; Dr. Edmond Souchon, diploma for improved method for the preservation and exhibition of anatomic specimens; Dr. A. M. Stober, Cook County Hospital, diploma for exhibit, illustrating blastomycosis; Dr. Mallory and Dr. Wolbach (Harvard), diploma for exhibit of drawings and photomicrographs, illustrating the classification of tumors; U. S. Public Health and Marine-Hospital Service, honorable mention for exhibit, illustrating the investigations of Dr. C. W. Stiles on bookworm; Iowa State University, honorable mention for instructive tuberculosis exhibit; Cincinnati Hospital, honorable mention for creditable group of specimens; Philadelphia Polyclinic, honorable mention for creditable exhibit of group of teaching specimens; Lying-in Hospital of New York, honorable mention for creditable exhibit.

The Committee on Transportation and Place of Session recommended Atlantic City as the next meeting place, which choice was agreed to by the House of Delegates. The Reference Committee on Legislation and Political Action reported, requesting the Committee on Medical Legislation to arrange for a conference with the Committee of One Hundred, the Surgeons-General of the Army, Navy and Public Health and Marine-Hospital Services with a view to securing cooperation on the

establishment of a National Department of Health. After the transaction of some routine business the House adjourned.

One hundred and thirty-four members of the House were present out of a total membership of 142. The meetings of the House were better attended than at any time since its organization. The business was dispatched with accuracy and rapidity, the most notable tendency being the reference of resolutions, communications, etc., to the appropriate reference committees without discussion, reserving the consideration of the questions involved until the reference committee had considered the matter and submitted a report.

The social events of the week were particularly attractive. On Monday night the secretaries of the state associations and the editors of the state journals met at dinner and completed the organization of a state secretaries and editors association. A dinner to foreign guests as well as a number of other social events also occurred on Monday evening. On Tuesday evening twenty-seven alumni dinners were held in the various hotels and restaurants throughout the city, the largest being that of Northwestern University Medical School held at the Illinois Athletic Club, at which over 800 alumni were present. On Wednesday evening the president's reception and ball was held at the Coliseum, thousands of members and guests being present. On Thursday evening the local profession tendered the members of the association a smoker at the Coliseum, at which the attendance amounted to about 8,000. Numerous social attractions were provided during the day for the ladies and guests, including receptions at the South Shore Country Club, Chicago Women's Club, etc. The sections were all largely attended and the programs were of a high order. The session was in every way the most noteworthy of any which has yet been held, and it is anticipated that some years will elapse before the record established will be surpassed.

COUNTY AND DISTRICT SOCIETIES

ADAMS COUNTY.

The Adams County Medical Society had their regular meeting, June 8, in the Elks club rooms, President J. B. Shawgo calling the society to order at 11 a. m. Others present were Drs. Robbins, W. W. and J. G. Williams, Ball, Knox, Center, Haxel, Harrison, Koch, Christie, Jr., Nickerson, Rice, Grimes, K. Shawgo, Shepherd, Pitman, Montgomery, Zimmermann, Blickhan, Spence, Gabriel, German, Lierle, Knapp, Thompson, Groves, Whipple, and Wells. The secretary was instructed to mail a copy of the new constitution and by-laws, together with a copy of "The Principles of Ethics," to each member. Dr. L. H. A. Nickerson made an interesting report of the state meeting at Peoria. The physicians of Quincy and Adams county were delighted over securing the next meeting of the state society. Acting upon the suggestion of State Secretary Weis, the following gentlemen were elected as the committee of arrangements for the next state meeting: Drs. J. H. Rice, R. J. Christie, Jr., L. H. A. Nickerson, C. A. Wells, Kirk Shawgo, Joseph Robbins and T. B. Knox. Plans are maturing for the big annual outing, probably an excursion, of the physicians of this part of the state next August. The committee chosen for the purpose reported resolutions of sympathy for Dr. L. B. Ashton on the death of his mother. The application of Dr. G. L. Thompson, of Kellerville, was read and referred to the censors, and upon a favorable report from them Dr. J. B. Ross of La Prairie and Dr. Jos. H. Bloomer of Quincy, were elected to membership. The secretary was directed to send a statement to the *State Journal* disclaiming any participation of the profession of Quincy in the flamboyant advertising which was indulged in by the Quincy Elks at the National Hotel at Peoria in their efforts to secure the convention of Elks for this city. The society had luncheon at Hotel Newcomb, after which Dr. J. M. Grimes of Camp Point, one of our honored and active members, read an interesting paper on "The Reminiscences of Fifty Years' Practice." Dr. Melinda C. K. Germann, Quincy, gave an able paper on "Diphtheria-Antitoxin," both papers being quite generally discussed. C. A. WELLS, Secretary.

THE PRACTICE OF MEDICINE FIFTY YEARS AGO IN ADAMS COUNTY.

J. M. GRIMES, M.D., CAMP POINT.

The practice of medicine fifty years ago in this county was a very different proposition from what it is to-day. The doctor then did not visit his patient in an automobile, nor even in a top buggy, but astride his faithful horse he made his rounds. With better roads and comfortable vehicles much of the old-time hardship and exposure to storms and hot sun has been taken off the doctor's life. The study of medicine then and now has changed. Then the young man went into a preceptor's office where he read and studied anatomy, materia medica and therapeutics for one or two years. He also prepared the tinctures, made the pills, mixed and finely powdered the "Dovers," and in short, made ready from the crude drugs the medicines for use. This was a school in which he learned much that prepared him to take advantage of his college teaching. Judging from reports I read in medical journals, therapeutics is sadly neglected in the schools to-day, perhaps because the pharmaceutical houses are sending out ready-prepared remedies by the hundred to cure every known disease. The use of these saves the prescriber an amount of labor and relieves the busy practitioner of much study, but it would be better to know just what we are giving our patients. Right here I would refer the young men to the U. S. Dispensatory for daily reading, for there you will find the medical properties and use of all chemicals and plants used in medicine and the arts. Then there were not so many remedies in that day, nor were they so elegantly prepared. No capsules for quinin, nor chocolate-coated tablets, nor elegant elixirs. The antikamnia nor "Denver Mud" fellows were not known.

Each doctor mixed his own prescription and did not have them separately prepared and handed to him by a gentle traveling man, with enough advertising blown in the bottle to enable the patient to procure the next bottle without consulting his advisor.

Specialists were not so plentiful then. The day of specialism had not arrived. The family doctor looked after their ills, but the Lord cares for him now as the good old family doctor is no longer one of us. No matter what the trouble, a specialist must be consulted. The general practitioner can not be depended upon except for minor ailments or rough, hard drives. Then no trained nurses, for the friends and neighbors cared for the sick. Trained nurses are surely a blessing to the sick to-day, for the care of the sick is more than half the treatment in many cases. What a relief to know that your patient will be properly cared for and your directions carried out.

The medical journal was not then a trade journal, used more for the benefit of the proprietary medicines than for the doctor who pays his subscription expecting to receive something in return. The doctor then did not daily receive reprints advertising some mixture whose combination and manner of preparation were unknown, but warning you against worthless substitutes and imitations. Medicine in all branches has made great advances in fifty years, but probably more in etiology and diagnosis than along any other line. Malaria was then the all inclusive diagnosis; now the germs are responsible for everything except what the mosquito does. Possibly the microbe and mosquito are overworked as malaria once was. Anyway the profession is certainly coming better to understand disease and its cause, and is much better prepared to treat and control disease now than then. The advance in diagnosis, improved instruments of precision as stethoscopes, clinical thermometers, the *x*-ray, etc., mark the advance of our better and more correct diagnoses, and without a correct diagnosis we are at sea with our treatment. But with all our advances we have not cut down the mortality except in the matter of contagious diseases, which is much indeed. In erysipelas the old tincture of iron and iodin treatment of fifty years ago are now used, I am told. But the amelioration of disease and its cure are the great objects of our profession, and to successfully combat the enemy we must know the cause and the remedies best calculated to control and remove them.

As I look back it seems to me that the doctors of those days never thought of the money at the end of the case, but benevolence and the opportunity to aid their fellows was the motive which prompted to their best efforts. As a result the doctors died as they commenced, poor. As I look back over the years and their hard work and care, I feel that perhaps I have done more good than harm and have enjoyed myself with plenty to eat and wear. There were giants in those days who filled the journals with well written, logical articles. We had successful practitioners then in Quincy and in Adams county who left their impress upon the communities in which they lived. To the young man, let me say, do your work well and never neglect the call of duty for pleasure; attend to the minor details of your cases and let your patients see that you are interested in them and you will be appreciated. If the patient be rich, attend him for the money; if poor, for the duty you owe him and yourself. Each case will bring you others. Stay with them to the last and don't quit.

The old-time doctor with his calomel, quinin and opium, the art and practice of bleeding, accomplished much and is to be congratulated upon the many victories snatched from defeat. He was an all-round medical man because he had to rely upon himself and his own resources. To him the medical profession owes a debt of gratitude for the substantial foundation upon which the art and science of medicine rests to-day.

CLAY COUNTY.

The Clay County Medical Society held their regular annual meeting at the courthouse in Louisville, Tuesday, June 16, 1908, at 2 p. m. The president, Dr. George M. Steely, called the meeting to order. There were present: Drs. Gilson,

Dillman, McKnight, George W. Steely, Pridmore, B. F. Steely, Fairchild, Walton, Beckley and Duncan. Dr. W. F. Fairchild read a paper on extra-uterine pregnancy, with report of a case successfully operated on. Dr. Fairchild also exhibited the ovary and tube. Dr. B. F. Steely, Louisville, gave in a paper his "Experience with Pneumonia During the Past Winter." Both papers were interesting and instructive and were discussed by the members present. The election of officers resulted as follows: President, Dr. C. E. Duncan, Flora; vice-president, Dr. J. V. Dillman, Ingraham; secretary, Dr. J. W. Walton, Clay City; treasurer, Dr. G. C. Pridmore, Clay City. The next meeting will be held at Clay City September 1.

C. E. DUNCAN, Secretary.

COLES COUNTY.

The Coles County Medical Society met June 26, 1908, in Charleston, Ill. Dr. J. W. Pettit was the guest of honor and delivered a paper before the society in the afternoon, and in the evening addressed a public gathering of some 1,500 people on the general subject of tuberculosis. Dr. Pettit's remarks were most enthusiastically received.

R. H. CRAIG, Secretary.

COOK COUNTY.

CHICAGO MEDICAL SOCIETY.

Regular Meeting, April 29, 1908.

A regular meeting was held April 29, 1908, with Dr. Robert T. Gillmore in the chair. Drs. Geo. F. Suker and Paul Gronnerud presented jointly a specimen of metastatic sarcoma beginning in the eye, and reported the case. The case was discussed by Drs. Buford, Pennington, and Reichmann, and in closing by Dr. Suker. Dr. H. Manning Fish read a paper entitled "Nasal Accessory Sinus Disease as an Etiological Factor of Pulmonary and Cardiac Symptoms," which was discussed by Drs. Geo. W. Webster, J. L. Miller, Robert B. Preble, D'Orsay Hecht, J. R. Pennington, Henry Gradle, Geo. F. Suker, J. Holinger, and the discussion closed by Dr. Fish. Dr. C. C. Rogers read a paper entitled "Unusual Localization of Appendiceal Abscesses," which was discussed by Drs. Edward H. Ochsner, Albert Goldspohn, and in closing, by the essayist.

SPECIMEN OF METASTATIC HEPATIC SARCOMA BEGINNING IN THE EYE.

GEO. F. SUKER, M.D., AND PAUL GRONNERUD, M.D.

Dr. Geo. F. Suker:—The specimen I have to present this evening is rather unusual, insofar that the primary sarcoma started in the iris of the right eye. The specimen was taken from a woman, 31 years of age, but the disease began six years ago. She is the mother of five healthy children, and the first appearance of any sarcoma was noticed when she was carrying her first child early in 1901 at which time a small nodule was recognized in the iris as being sarcoma by Dr. Harper, who at that time did an iridectomy. This gave her relief for a year or two. With a subsequent pregnancy (the second) she again developed a local recurrence in the right iris, and a second iridectomy was done. This likewise kept the eye quiet, or apparently so; and, in 1904 she became pregnant (third) again, and at that time another recurrence took place, for which the eye itself was enucleated by Dr. Bonine, of Niles, Mich. She remained perfectly quiet as far as any metastasis was concerned and free from local recurrence until 1906, when she became pregnant once more (fourth). She now developed local recurrences in the cellular tissue of the orbital content, for which *x*-rays were advocated, but proved of no avail. A local surgeon in Michigan removed growths from the orbit which were not larger than a pinhead to that of a small pea. No recurrence in the orbit took place until 1907. In the early spring of 1907 she again became pregnant (fifth) and at this time came under my care. The local recurrences in the early part of 1907 were very small. She was pregnant about four months. I wanted to do an extensive exenteration of the orbit, but did not feel like doing the

operation in the face of consultation which was to the contrary. I carried her through as best I could, upon a line of treatment empirical in a measure. Knowing the full import of the case, I was justified in being experimental in this measure, and for that purpose prescribed during pregnancy mulyptol, five minims, three times a day, and methylene blue three grains four times a day. This apparently lessened the size of the melanotic nodules in the orbit. She was delivered of a wholesome child—normal labor. The first urine passed by the child was blue, and on the first breathings the child emitted the odor of eucalyptus, so that we know that both passed through the circulation of mother and child. Soon after she began nursing the child the metastasis in the orbit took on a rapid growth in the socket and attained the size of a hen's egg. I was compelled to exenterate the orbit, which I did for the relief of the pain. This was in July, 1907. While she was under the influence of the anesthetic I made as careful an examination as possible, bimanual and otherwise, and determined for the *first time* that she had nodules in her liver along the presenting border. These nodules grew rapidly and we have the specimen here.

The exenteration of the orbit I did in a rather unusual manner, insofar that I attacked at the same time the accessory sinuses. That is to say, I cleared out the frontal, the maxillary, the sphenoid and the ethmoid sinuses by breaking through the orbital plates, also removed the periosteum on the frontal and malar bone and made as clean a sweep as I possibly could. Fortunately for her, the socket from now on showed no local recurrences. I had primary union and a clear orbit left.

The patient made a fairly good rally as far as we could determine, until December of 1907, when she presented herself again, complaining of considerable abdominal pain, the nodules in the liver having materially increased in size. She was taken in charge by Drs. Gronnerud and Pennington and was removed to the Policlinic Hospital; an exploratory laparotomy incision was made, and it was then determined that the liver only was involved as suspected; although, at the time it was thought that sarcomatous nodules elsewhere might be found. This is the size of the liver (showed specimen). It has grown materially since July, 1907. It is a good sized liver—scarcely any normal liver tissue is to be seen. We have here the postmortem contents of the entire abdominal cavity, including the diaphragm.

In addition, it may be said that after the exploratory laparotomy incision, the woman recovered nicely and felt much better than before. She had less pain; her appetite and color improved for the time being; but five or six weeks after the operation these growths began increasing in size extremely rapidly. She did not live very much longer, and died about the middle of April, 1908.

A postmortem examination was made at once. I present the case with these few remarks to show the fallacy of at times doing an iridectomy for sarcoma of the iris when a patient still has some sight. The only radical line of treatment to be pursued in conditions of this kind is to make complete enucleation of the globe irrespective of the amount of vision. By the enucleation of the globe, I mean to infer not only the enucleation of the globe itself, but the removal of the entire capsule of Tenon as far as possible. This gives the patient the only possible chance of any longevity thereafter. We know full well that it makes very little difference so far as we can see these cases in a retrospective manner, irrespective of the size of the sarcomatous growths, whether they have broken through the globe or not, that recurrences are very liable to happen. In this case the hepatic metastasis ran a very rapid course, and as far as I know it is unique, insofar as this is as complete a history as could be obtained of a patient who had a sarcoma develop primarily in the eye, with subsequent metastatic manifestations thereof in the liver covering a period of about seven years. The rest of the organs at the autopsy proved to be perfectly clear or free from disease. At the autopsy I removed the left eye to see whether there was any sarcomatous involvement, but I have not found any as yet in the microscopical sections. The microscopic slides of the orbital growth show round celled melanotic sarcomatous tissue; and one peculiarity is that the sarcoma seems to have been encapsulated. That capsule, I take it, was from an involvement of the capsule of Tenon, which was not removed at the time of the enuncleation, but which should have been.

Dr. Pennington, who was present at the postmortem, can add fuller details to the findings.

DISCUSSION ON THE CASE OF DR. SUKER AND DR. GRONNERUD.

Dr. Coleman G. Buford: It seems to me, as a surgeon, that a lesion so important as sarcoma should not be dealt with by any temporizing means. I agree with Dr. Suker that it was certainly an error to temporize in doing an iridectomy in this case, simply resecting the sarcoma which was in evidence in the iris. We know that wherever sarcoma appears, there is likely to be a recurrence, no matter how radically we deal with the disease, and in this instance, even though vision was not involved, the eye should have been removed.

I recall a number of cases of sarcoma of the superior maxillary which I saw when I was Dr. Fenger's assistant. It was his common practice, when there was any suspicion of the sarcoma involving the floor of the orbit, to not only resect the floor of the orbit, but all the fat therein, and to do an enucleation of the eyeball as well.

Dr. J. R. Pennington:—The weight of this specimen as it is now, I was told by a young man at the hospital who weighed it, including the intestines, kidneys, uterus, spleen, etc., is 25 pounds. That would make the specimen itself weigh probably 15 or 18 pounds. This is not as large as some of the specimens that have been removed. There are still specimens on record that have weighed 27, 28, and others 18 and 17 pounds. In this case the growth extended downwards, filling the thoracic, abdominal and pelvic cavities practically. You could put your hand in between the pelvic bone on the right side and the growth in contact. On the left side it was not quite so low, but on the right side it extended up and pushed the diaphragm up to the second intercostal space. On the opposite side the heart was pushed up under the clavicle; the lungs were pushed up as well. The woman was rather small, and this mass filled the entire cavity. The abdominal walls were tense from this growth, consequently, I do not see how a cavity could be filled much more completely than these three cavities were by this growth. The woman died undoubtedly from heart failure because the heart was so pushed up and pressed against that it was impossible to beat. The gall bladder was found resting on the fundus of the uterus. These growths usually occur where pigment is present, that is, in the uveal tract or in the skin or in black moles. When the growth occurs in the eye, then it more usually attacks the liver only. When the skin or moles are involved, then some of the other organs are liable to be implicated also.

Dr. Max Reichmann:—Dr. Suker mentioned the use of the Roentgen rays in cases of sarcoma. I have a case under treatment now, which was sent to me by Dr. Bohart four weeks ago. The patient is a woman, about 40 years of age, who has a tumor the size of a child's head at the upper third of the femur. She was sent to me for the purpose of having a radiogram taken, and the picture showed distinct features of a sarcoma, as it is shown on the Roentgen plate. Operative interference was out of the question, and Dr. Bohart asked me to try the Roentgen rays. According to the method of Rieder I put her under treatment with the full strength of Roentgen rays in the water cooling tube, treating her every day for fifteen minutes, filtering the rays so that the soft rays could not attack the skin by interposing a thick layer of leather. To-day this woman had the twenty-sixth treatment. The tumor has diminished about two inches in circumference, and she can move the leg in the joint which she could not do before.

There are several instances in the late literature on the subject where investigators have found that the Roentgen rays have a beneficial influence upon sarcoma, even if an operation can not help these patients any more.

Dr. Suker (closing the discussion):—I have nothing further to add other than to emphasize the fact that the best advice any of us can give our patients who have sarcoma of the iris, which is often associated with good useful vision, is that an enucleation be done. I have seen cases of iris sarcoma where patients have had 20/20 vision, and some others considerably less, but my advice has always been

to make a complete enucleation and sacrifice the cosmetic effect, exenterate the orbit at the beginning, doing as radical an operation as possible, unmindful of the visual acuity. And a radical enucleation to my mind consists in opening up the sinuses as well, so as to convert the orbit and sinuses into one large space; remove all the periosteum you can, being radical in the true sense of the term. In following these cases up we know that they have the best chance by so doing. Those who have had only an iridectomy done have succumbed sooner or later.

A year or two ago Drs. Casey Wood and Brown Pusey (*Arch. of Ophthal.*, '02) tabulated the histories of cases of primary sarcoma of the iris which they had gathered from the literature. They collected forty-nine cases. This case was not included in the list. They came likewise to the conclusion that a complete enucleation should be done soon as sarcoma of the iris has been diagnosticated. I grant you that an iridectomy is justifiable for microscopic purposes to aid the diagnosis. But as soon as you have made the diagnosis, follow up the iridectomy then and there with a complete enucleation. If orbital tissue is involved exenterate orbit and sinuses.

Dr. H. Manning Fish read a paper on Nasal Accessory Sinus Disease as an Etiological Factor in Pulmonary and Cardiac Symptoms.

DISCUSSION.

Dr. George W. Webster:—If I understand the essayist aright, he maintains the following propositions: The death rate from pneumonia is on the increase; there are more deaths from pneumonia than from tuberculosis; heart disease is on the increase, and finally, that sinus disease may be justly credited with being a most important etiological factor in these diseases and in their increasing prevalence and mortality, and that local treatment of the sinuses will lessen the prevalence and mortality in the latter by cutting short the disease.

Let us look at the census reports of the mortality from these diseases; but, before doing so, a few words of explanation may not be amiss. First of all, the author makes no statement as to whether the reported increase in mortality applies to the whole world or only to the United States, or only to the registration area of the latter. Let us see if the statements are true as far as the United States is concerned.

The present system, the international system of classificaton of causes of deaths, was adopted by the United States Census Bureau and the Department of Labor in 1900, and is in use by twenty-six of the leading countries of the world, by the registration states, and by all the leading cities of the United States, outside the registration states, with the exception of Chicago, which has a system of her own. Previous to this time mortality statistics were estimated and not based upon reports of deaths. The census year did not correspond to the calendar year. At the present time there are only ten states in the registration area: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, New Jersey, New York, Connecticut, Michigan, Indiana. It is thus apparent that correct authentic mortality statistics are available only since 1900, and then for only ten states in the union. These reports show that the average death rate from tuberculosis for the years 1900 to 1905 was 172.3 per 100,000 living, while for pneumonia the average rate for the same period was 134.9. The death rate for pneumonia for each year was as follows: 1901, 133.3; 1902, 124.5; 1903, 122.2; 1904, 135.7; 1905, 115.7. Average, 134.6—1900 to 1904. Thus we see that at least in the United States, in the only region, and during the only period during which we have authentic mortality rates based upon death certificates, the death rate from pneumonia is not nearly as high as from tuberculosis, and that the death rate from pneumonia during the five years from 1900 to 1905 inclusive, did not increase, but that there was a steady decline from 133.3 in 1900 to 115.7 in 1905, with the exception of 1904, when it rose slightly above the average for the five year period. During the above period there was an increase in the death rate from tuberculosis. This is the only conclusion of the essayist with which I agree.

It is rather embarrassing and exceedingly difficult to discuss this paper in-

telligently because of the terminology used by the author. For example, he uses as synonyms the terms "pneumonia," "inflammation of the lungs," and "pneumococcemia," and says unqualifiedly, "The presence of pneumococci in the blood does not cause pneumonia," and again, "pneumonia is merely an accident or a symptom." Again he says, "The question is, can sinus disease cause pneumonia and heart disease?" If we are to accept the author's definition of pneumonia as an "accident" or "symptom," we must answer yes, as far as the pneumonia is concerned, for the infectious agent which causes sinus disease surely may cause "symptoms" and "accidents."

"Heart disease," "affections of the heart," "cardiac symptoms," "intense palpation," "fluttering of the heart," are too vague and indefinite and can not be rightfully regarded as disease of the heart as we understand that term. Again, he does not say what he means by the term, "sinus disease." The essayist makes certain unqualified statements that are utterly at variance with our notions of pathology and therapeutics and furnishes no proof, indeed no evidence that he is right and that the whole scientific world is wrong.

The author's fallacy consists in assuming something of which he furnishes not a particle of evidence, that the sinus disease precedes the pneumonia, that in the latter the pulmonary lesion is simply a congestion brought about reflexly through some mysterious action upon the sympathetic, and further assumes that treatment directed to the sinuses would do away with the pulmonary lesions, and the patient would be well. Another example of illogical, fallacious reasoning is found in the statement that "scarlet fever, measles and influenza are the leading causes of pneumonia and of sinus disease, this leading but to one conclusion, and that is if sinus disease is a cause of pneumonia it is a frequent cause." The sinuses may be infected by any micro-organisms that may reach them that are capable of producing an inflammation of the membrane lining them. Even though we admit that these sinuses are infected in pneumonia, it is as absurd to maintain that after general infection has taken place and the lung has become consolidated, to treat the sinus would at once clear up the lung, as to hold that it would have the same effect on a coincident pneumococcic arthritis or thrombophlebitis, or to maintain that because a diphtheritic infection entered the body by way of the tonsil that it could be suddenly terminated by removal or treatment of the tonsils, or that the tetanus could be stopped after it is well developed, by an amputation of the wounded foot through which the infection entered the economy.

Pneumonia is an acute, infectious, self limited disease due to the pneumococcus, and in which the lung manifestations are among the many manifestations of pneumococcic infection, the blood probably being invaded in probably every instance. This organism circulates freely in the blood and may cause local inflammatory reaction in almost any tissue or organ of the body and the nasal sinuses may be at times involved, but I know of no evidence even tending to show that pneumococcic sinus infection is present in a large proportion of cases and that the sinus infection precedes the general infection and the pulmonary involvement, and these facts must be demonstrated before the essayist can successfully maintain his thesis.

In 1889 Nothnagel put forward the view that there is a primary influenza pneumonia. Two years later the influenza bacillus was discovered, and Pfeiffer, Beck, Wasserman and others showed that in pure uncomplicated cases a pure culture of the influenza bacillus was found in the sputum; the pneumonia is a continuation of the same process from the bronchi into the pulmonary tissue and is quite independent of the ordinary croupous or lobar pneumonia. But secondary infection with the pneumococcus is probably common, giving rise to a true croupous pneumonia. Other forms of secondary infection may also occur.

For example: Nothnagel says that "very often" the catarrahl inflammation extends to the fontal sinus, the ethmoid or the antrum of Highmore. Weichselbaum regularly found either catarrhal or purulent inflammation of the nasal sinuses in this affection. Nothnagel says in one case he found typical influenza bacilli in the pus.

As to the reported case in which the patient is said to have been taken ill at

about midnight and in seven hours developed a temperature of 104, respirations 30 or 40, with rusty sputum, with a patch on the lung, and this then clearing up by treatment directed to the relief of the condition in the sinuses, I do not hesitate to say that I do not believe it is a case of pneumonia. I do not believe that any one is justified in making a diagnosis of pneumonia from any temperature, any pulse rate with the simple symptoms of congestion in the base of the lung, as reported in the paper, these same physical signs all disappearing within a few hours. The case, notwithstanding the fact that pneumococci were found in the sputum, was not one of pneumonia as we understand the term pneumonia. We know very well, and the doctor has well said, that pneumococci may be found in the respiratory passages, even in health. Again, pneumococci in the sputum do not constitute a pneumococcic infection.

Dr. J. L. Miller:—I only have a few words to say in regard to Dr. Fish's paper. First of all, the statement in regard to the prevalence of pneumonia and of heart trouble at the time of the influenza epidemics is something we must all recognize, but, as has been already said, there is a distinct pathological basis for this, and it is unnecessary to introduce a new theory. We have, for instance, in influenza a catarrh of the entire respiratory tract, in which the influenza bacillus plays an important rôle. That same influenza bacillus may invade the lung tissue and set up a pneumonia, or, as is frequently the case, prepare the soil for the ever present diplococcus of pneumonia.

Again, in the heart troubles which follow influenza, they are not in the nature of neuroses, but they have a distinct pathological basis, either a myocarditis or, as has been shown within the last year, in laboratory work, involvement of the coronary vessels as the result of toxemia with the influenza bacillus.

In regard to these cases of heart trouble which Dr. Fish refers to, and which he says were neuroses, all of them, I think, we can readily explain why these patients were cured by opening up the sinuses. The doctor is an enthusiast on the rôle played by the sinuses in a variety of conditions, and among them, heart troubles. We know that in the treatment of any neurosis, psychotherapy plays a very important rôle, and that the individual who can bring the strongest suggestion to bear on the patient is the one who cures most of these patients, and the doctor's enthusiasm—honest enthusiasm—in this respect has accounted for his success. I have no doubt that some of the patients could have been cured by christian science.

There is one thing of importance in the doctor's paper, leading us to think along certain lines. We know already the importance which the gall bladder plays as a breeding ground for the typhoid bacillus. Typhoid bacillus may be in the gall bladder for years and years and appear in the stools of these patients. It is not impossible that the sinuses may act in such a way as to be breeding grounds and may play a more important rôle than we have thought in the past in retaining infections with certain micro-organisms in the respiratory tract.

Dr. Robert B. Preble:—I do not feel I have anything to say about this matter except to remark that I myself am in part responsible for the change which Dr. Fish made in the title of his paper. The title of the paper as it appears in the program and the title as it appeared in the carbon copies of the paper which he supplied to the various gentlemen whose names appear on the program this evening to open the discussion are different. I suggested to him that he alter the title of his paper from the way it read. If I remember rightly, he spoke of sinus disease as a cause of pneumonia, and then it was changed to sinus disease as a causal factor in cardiac symptoms, etc. I suggested this change because it did not appear to me that he had furnished satisfactory evidence that these sinus diseases had actually anything to do with the causation of the diseases of the lungs or of pneumonia, as he stated in his original title, or of heart disease. I must confess, too, I was not particularly impressed by the case of pneumonia, although I am willing to accept that it was pneumonia, because pneumonia is a disease of great irregularity; that is, it is quite possible for pneumonia to run its course in a much briefer period than it does on the average, and I can not see that draining the sinuses had anything to do with the satisfactory course the

case took. I think just as Dr. Miller has suggested, that in some instances the infected sinus may furnish an infection atrium. It is a well-known fact that whenever bacteria lie in a cavity, and that cavity becomes, for some reason or other, closed, these bacteria undergo alteration in virulence; that an organism which formerly was quite innocuous becomes, after the closure of the cavity, a virulent organism, and I can imagine sometimes pneumococci lying quietly in a sinus or sinuses and causing no harm until for some reason the exits of these sinuses are closed. Then the organisms undergo a change, become virulent, and implant themselves upon the lungs, after having entered the blood, or in some other tissues of the body.

The observations of Dr. Fish are interesting, rather than of great importance. It is interesting to find that apparently as a result of sinus disease one can have various cardiac subjective symptoms, which are not demonstrably the result of any actual disease of the heart, just for so long we have known people who can have asthmatic attacks which doubtless cease after the removal of polypi from the nose. But I think it is right that we should use extreme caution in laying much stress upon observations of that sort, because the history of medicine is filled with instances of men going wrong from drawing too broad conclusions from isolated observations. They take themselves and their observations too seriously. We know how frequently the gynecologist has been led into all sorts of devious paths, and the proctologist in the same way. And so, too, the same may be said of the eye man. Possibly more conspicuous than any other specialist, he has discredited himself more or less by jumping at broad conclusions from limited observation, and so I would caution Dr. Fish and the other nose and throat men about laying too much stress upon these interesting observations that they make.

Dr. D'Orsay Hecht:—I feel somewhat in agreement with Dr. Preble's rather conservative tone relative to Dr. Fish's paper, and feel that from the neurologic side there are a few points that may require a little illumination. Dr. Fish has been enthusiastic in raising the sinuses to the dignity that is just a bit born of his enthusiasm rather than to real close research into all of the pathogeneses that can possibly arise from sinus disease. He has dealt with terms to-night that, in a measure, have raised just criticism from Dr. Miller, especially with reference to the comment that a cardiac murmur is not necessarily to be interpreted as one of cardiac neurosis or of a neurotic type. I think in many of these cases a myocarditis is to be thought of and may be concluded.

When Dr. Fish refers to a series of symptoms, such as vertigo, meningeal irritability, syncope and dyspnea, and tries to put them on a sound basis and brings them into direct causal relation with sinus disease, he has perhaps as much justification for that as we have for assuming that so many of these symptoms on the part of the nervous system are due to toxemia; that delirium is necessarily interpreted as a toxic delirium, and that dyspnea is an evidence of toxemia. On the other hand, we do not need to go further than one assertion or observation which Dr. Fish has made with regard to the pathogenesis of these symptoms in the nervous system. He goes much beyond the point where he is justified, and I should say that his conclusions are extravagant. What we know of the thoracic sympathetic nervous system is not founded on any definite knowledge at all, and when we seek to bring cardiac neuroses into direct causal relation with the thoracic sympathetic system, I think we are doing something that is without foundation in fact and without foundation in scientific knowledge.

One more point with reference to optic neuritis which occasionally follows sinus infection. I think as neurologists we are inclined to believe that optic neuritis is in many instances due to some pressure phenomenon, and with proper drainage of the sphenoidal sinus and drainage of the ethmoid, the optic neuritis subsides, for the reason that the pressure has been relieved. Let us take the sphenoidal fissure, this is so thin that it is not present to a sufficient extent to wall off any sort of accessory sinus infection, and for that reason we may get optic neuritis to a very great extent.

Dr. J. R. Pennington:—I want to thank the speaker before the last (Dr. Preble) for getting pneumonia and proctology associated. He intimated that the

gynecologist and the proctologist have been led into byways. Probably they have. I would like to ask whether or not the internist has ever been led off into by-paths; whether the internist is always correct in his diagnosis, and whether or not he always cures his patients. The proctologist is ever ready to compare notes with the internist, both as regards improvement in technic and in treatment of rectal diseases in the past five or ten years, and I think you will find our work will compare favorably with that of the internist.

Dr. Henry Gradle:—Dr. Fish's conclusions were presented to us so hurriedly and they covered so wide a scope that it is difficult to determine how much to accept. A few of his observations have been noted by others, for instance, the liability to involvement of the optic nerve in consequence of sinus infection, though it has not been demonstrated that this is a frequent occurrence. On the other hand, many of his conclusions seem to be based on cases following influenza. We know that influenza may cause sinus disease, but that it may also cause infection of other organs primarily. It is hence rather difficult to analyze such cases clinically, and detailed conclusions can not be satisfactorily drawn from them. My own observations on sinus disease do not in any way compare with those Dr. Fish has stated. But I do wish to call attention very forcibly to one subject which I think the internist has not sufficiently accepted, and that is, the importance of disease of the nasal passages as a cause of chronic bronchitis. That subject has not been fully recognized by the internist. Chronic bronchitis in young people is undoubtedly in the majority of instances dependent upon lesions of the upper air passages. I judge of the sequence of these events not simply from mere observations of cases. It is common enough to observe that a bronchitis is secondary apparently in its course to nasal affections. But I have, too, a fair number of records showing that a bronchitis that had lasted indefinitely ceased after clearing the nasal passages or curing a nasal suppuration sometimes located in the sinus, sometimes of a diffuse character. I would mention as a subject kindred to this the relation of adenoids to bronchitis. It was originally in the treatment of adenoids that my attention was called to the fact that a chronic bronchitis that had resisted other treatment is very often promptly influenced by removing an obstructive nasal lesion.

Dr. Geo. F. Suker:—I dare say we, as ophthalmologists, can show the internists a point or two in making diagnoses by the use of the ophthalmoscope. But to come more to the point under discussion. There is no question in my mind that sinus lesions do produce a good many of the optic inflammatory reactions. I am satisfied of that. While my experience has not been extensive, it has been sufficiently accurate in quite a few cases to put it on a rather sound basis. I think the paper of Dr. Fish has led some of us to draw false conclusions, or at least, hasty conclusions. I do not think the import of the paper has been properly taken as a whole. I do not think the doctor intends to convey the idea that pneumonia, as it is called, or inflammation of the lung, to put it more properly, is dependent on sinus lesions, but that there may be a relationship existing between the two in so far as the sinus being a space may be occupied by and contain pneumococci, staphylococci, and streptococci, and may act as some source for the direct invasion in getting the pneumococci where they belong properly to develop the pneumonia. In other words, they may aggravate the condition, and certainly if we can relieve the focus we can in a measure alleviate others in that sense. I do not wish to convey the idea at all that the etiology of pneumonia is to be found in the accessory sinuses of the nose, but that sinus diseases as a whole do present in many instances cranial complications. There is no question about that. Operative conditions of the sinuses will give us sometimes very marked cerebral disturbance, and we are prone to think that one is not justified in attacking these regions in a surgical manner. I can recall one instance quite definitely that happened in my own practice some years ago. In this case the trouble was not sphenoidal or ethmoidal, but it was located in the frontal sinus. There was pneumococcus infection, but how the patient got it I do not know. I did not operate under a general anesthetic. I went through by way of the nose, opened the sinus and drained it, and within a week or ten days thereafter he developed what a gen-

eral practitioner calls pneumonia. I do not want to say for a moment that the frontal sinusitis was the cause of the pneumonia. Far from it, but it did seem somewhat related in a way, and the patient was in the hospital with no case of pneumonia near him. He was perfectly healthy so far as we could determine by any physical examination prior to the nasal operation, and he developed what was called a pneumonia. This occurred some years ago, and I do not think our conception of pneumonia has changed very materially since then. But undoubtedly cardiac complicatons arise from involvement of the sinuses in some cases. In the sinuses we have pent-up lesions or conditions, and we have absorption, with a certain amount of toxemia, either general or local, and why should we not have some distant nerve or peripheral disturbances. That is the idea Dr. Fish wishes to convey, rather than a specific etiology existing between the accessory sinuses and cardiac complications. He believes that we have in the sinuses a cause and a condition from which absorption takes place, and whereby we have a nervous disturbance, so far as the heart is concerned, which may act as a focus for assisting under proper conditions in developing certain pulmonary complications.

Dr. J. Holinger:—It seems to me that sins were committed in both directions, in overrating as well as in underrating the influence of sinus diseases on the general condition of our patients. The specialist is often dazzled by the wonderful improvement in bronchitis, etc., when he succeeds in establishing nose breathing, which is a frequent concomitant of sinus diseases. However, I do not think that the present moment is at all favorable to a complete settlement of the questions of influence of diseases of the sinuses upon general health. The specialists are still in the midst of investigating the anatomy and pathology of these cavities and of their lining, and new methods are daily published for diagnosis and treatment of diseases of the accessory sinuses of the nose.

Suppose that all these questions be settled, even then the question of influence of diseases of the sinuses upon diseases of the lower respiratory tract and heart can not be answered from conditions in acute diseases, because in all points concerning etiology and diagnosis a simultaneous infection of the two parts can never be excluded, and therefore a dependence of one upon the other can not be shown. In points regarding the treatment we can not expect satisfactory answers because the treatment of the sinuses in acute diseases is often identical with establishing nose breathing.

The chronic diseases of the sinuses offer better chances for enlightenment. In a paper on general blood poisoning from diseases of the sinuses read before the M. V. M. A. in Indianapolis I mentioned a number of cases where the cure of chronic diseases of the sinus relieved affections of the lungs, heart, etc., that had existed for years and could not be influenced by internal medication and expensive treatments in watering-places or hydrotherapeutic institutions in this country and abroad. Suggestion and autosuggestion could be excluded because the results were often as great a surprise to the patient as to me. On the other hand we must not expect too much from the treatment of chronic diseases of the sinuses as is illustrated by what is called rhinitis caseosa. In such cases great masses of dried up pus micro-organisms and epithelia may be located for years in the maxillary and frontal sinuses without any other discomfort to the patient except their odor.

The subject under discussion is a very complex one. Real progress and lasting results can only be expected if the general practitioner works hand in hand with the specialist. The profession at large ought to show respectful appreciation for the work that has already been accomplished and give encouraging support to the specialist by referring to him cases that the general practitioner can not handle. For the specialist careful study of the literature, patient, and accurate observation and compilation of facts, considered with cool judgment, are essential.

Dr. Fish (closing the discussion):—I want to say a word or two with reference to those cases that had certain cardiac symptoms, palpitation, fluttering, etc. Those patients, with the exception of the last one, came to me on account of eye symptoms. They had asthenopia, a flushed eye, or an optic neuritis. I told them I thought I could cure them by treating the sinuses. I did not make any sug

gestions about any heart symptoms. Since they have been operated on they told me about the heart symptoms they had. I ascertained at the time they took chloroform that the heart was irregular; but I had the anesthetist examine the heart to see whether these patients could take chloroform or not. I did not go into and try to find out their symptoms; they told me about their cardiac and pulmonary symptoms afterwards. Hence the relief in these cases can not be attributed to psychotherapy or to christian science.

Dr. C. C. Rogers read a paper on Unusual Localization of Appendiceal Abscesses.

DISCUSSION.

Dr. Edward H. Ochsner:—The essayist starts out with the statement that the position of the appendix depends on the position of the cecum to which it is attached, and it may be in any portion of the abdomen, and he illustrates that with the embryologic charts very beautifully—how it happens that the appendix may be any portion of the abdomen, depending on the length of the cecum and the mesocecum. These are, of course, facts that have been known for a long time, but they are facts that can not be repeated too often because they are too often forgotten. I know because I have seen it and experienced it myself, that very often physicians and surgeons ask me, and ask others, about this, that an abscess in a certain portion of the body can not be an appendiceal abscess because the appendix can not come to that portion of the abdomen. That is absolutely fallacious. There is no portion of the abdomen where an appendiceal abscess can not develop, and it is in the rare cases we must remember that exceptions may exist. It would be unnecessary to add additional experience or additional statistics as to the possible location of an appendiceal abscess. The essayist has shown us a sufficient number to impress upon us that appendiceal abscesses can occur anywhere in the abdominal cavity, and if we will remember that fact, we will not make the error in claiming, when we see a practical individual case, that this can not be an appendiceal case because the abscess is located in a place where the appendix is not found normally.

There is one point which this paper should emphasize and teach us, namely, that in very many cases of abdominal surgery it is very much more important to make a surgical diagnosis than to make an exact anatomical diagnosis. I do not care very much whether an abscess in the lower portion of the pelvis is a pyosalpinx or whether it is an appendiceal abscess; I do not wait until I can make a diagnosis. That is a terrible fault, especially among the European diagnosticians of great ability and great worth. It is very much more important to make a surgical diagnosis than to make an exact anatomical diagnosis. I saw one of the best diagnosticians I ever knew wait to make a diagnosis until a gallstone ulcerated through the abdominal wall. He wanted a correct diagnosis, but it was made postmortem. He should have a correct working diagnosis, and whether a surgeon or physician is able to make a diagnosis between a pyosalpinx and an appendiceal abscess, both of which occur in the cul-de-sac, makes no difference so long as he institutes the right treatment for either. And let me repeat: In a great many instances it is better for the patient and better for the mortality records and morbidity records that in these unusual cases which do not follow the rule to make a correct working diagnosis than that we make a correct anatomico-pathologic diagnosis.

Dr. Albert Goldspohn:—This very interesting subject brings to my mind some cases of years gone by. About twelve years ago a girl, a virgin, whom Dr. Fenger and myself did not think was properly a subject for a vaginal examination, became sick with pelvic peritonitis, and it was clear that there was the formation of an exudate in the left inguinal region, with very much constitutional disturbance. Dr. Fenger saw this patient in consultation and advised exploratory puncture, which showed pus, and then I evacuated the abscess by aspiration and awaited developments. Strange to say, that girl became better beyond our expectations. She recovered fairly good health and married. About two years after her marriage (she did not bear children) she became sick with very pronounced pelvic trouble, bilateral apparently, from a genital source. I then did an abdominal

section, a very radical operation, and during this operation an appendix vermiformis structure, at least eight inches long, was found extending from the ordinary location of the cecum, first, to the fundus of the uterus, there adherent, and then over to the sigmoid which lay in its usual location, and there also adherent, with a number of evident perforations in its course, and there was no evidence that this whole pelvic trouble had come from anything but the appendix.

On two different patients later than that I performed vaginal drainage for pelvic abscess and subsequently I had occasion to do abdominal section for them, and the location of the appendix, together with the entire history of the case, made it sufficiently clear that the pelvic abscess previously drained was from the appendix, and not from a uterine source.

One other such case was drained without a subsequent laparotomy in which I, for my part, am also satisfied, it was from an appendiceal source. Again, a man, about two years ago, had been suffering for some months under the care of the family physician, some distance away, with a lumbar or perinephritic abscess, which pointed in the loin.. An incision was made and pus let out. The man improved, but the discharge from the sinus continued. I got hold of him, and in opening the sinus came in the region of the kidney and found a fecal stone, an enterolith, closely located near the right kidney, with no evidence of any extrusion from that organ. Then, in making an incision over the appendix I found the appendix where it belongs, remarkably well looking, considering that it must have been the source of the abscess that had been evacuated months previously and of the stone that I found.

I refer to this to correct the impression, if any one should have it, in regard to Dr. Rogers' last remarks that the appendix must lie extraperitoneally if it shall cause an extraperitoneal abscess. This case shows that it may cause such an abscess when it lies intraperitoneally.

Dr. John A. Lyons:—In order to emphasize the point made by Dr. Ochsner, that it is better to make a working diagnosis than an exact anatomical one, I wish to call the attention of the members to the case of a man who was found on the public thoroughfare dying in this city about a week ago with general peritonitis, and who suffered a great deal of pain in the abdominal cavity, but which was not referred to the region of the cecum. On opening the abdomen it was discovered that this pain originated from and his death was due to an appendiceal abscess. That man suffered for months, but a correct diagnosis was not made because the pain was not specifically referred to the region of the cecum as we normally know its location to be. An exploratory incision was here indicated, would probably have prolonged his life or would at least have avoided the odium of a post-mortem diagnosis.

Dr. Rogers (closing the discussion):—In regard to the remarks of Dr. Ochsner about surgical diagnosis, I agree with him entirely that the diagnosis of appendicitis should be made before there is a gangrenous condition of the appendix and before an appendiceal abscess has formed, and the diagnosis can be made before we have a localized abscess and before we have a marked gangrene of the appendix. Once in a while in gangrenous appendicitis the microscope will not tell us the condition; but we find in a gangrenous appendicitis we have a leucopenia instead of a leucocytosis, but when we have a leucopenia we usually have a high polynuclear count. I have operated on a case with only 4,500 leucocytes where there was marked gangrene of the appendix and of the cecum.

Another point I want to impress is with reference to those cases that are brought to us complaining of abdominal pain associated with painful urination and painful defecation. I have a case in the hospital now I operated on about a week ago. The patient is a girl, and when brought to the hospital every time her bowels moved she would have great pain. A diagnosis of appendicitis was made, and in opening the abdomen a gangrenous appendix was found lying back of the uterus. Taking the symptoms and findings in connection with the uranalysis and blood-count a positive diagnosis can be made as to whether pus is present or not.

Regular Meeting, May 6, 1908.

A regular meeting was held May 6, 1908, with the President, Dr. Henry B. Favill, in the chair. Prof. J. Pfannenstiel,* of Kiel, Germany, read a paper, by invitation, entitled "Hebosteotomy Compared with Other Procedures in the Management of Labor in Contracted Pelvis." This paper was discussed by Drs. Charles S. Bacon, Joseph B. De Lee, and the discussion closed by the essayist. Dr. Robert B. Preble read a paper entitled, "Clinical Differentiation of the Various Types of Aortic Insufficiency." The paper was discussed by Drs. Robert H. Babcock, Edward F. Wells, J. F. Hultgen, and the discussion closed by Dr. Preble. Dr. Frank S. Churchill read a paper entitled "The Treatment of Meningococcic Meningitis with the Flexner Serum; Report of Cases." The paper was discussed by Drs. Lackner, Wells, Stocking, Herzog, Hultgen, Keyes, and the discussion closed by the essayist.

DISCUSSION ON PAPER OF PROFESSOR PFANNENSTIEL.

Dr. Charles S. Bacon:—I think we had a very worthy presentation of this important subject from a representative of a German University and German clinic. Those of us who are engaged in this special work of obstetrics know that Professor Pfannenstiel has contributed very much not only to the literature, but also many original ideas to the problem of technic, both in gynecology and obstetrics, and the paper presented to-night is a very concise presentation of a most important subject.

I imagine that many of us may be somewhat surprised that this operation, which has been so rarely or so little done in this country, has attained such a place in Germany, so that in one clinic—not the largest—27 operations have been reported. Moreover, it will probably surprise some of us apparently that this operation has displaced symphysiotomy. Professor Pfannenstiel has not said anything about that operation, but his silence justifies the assumption that he thinks that hebosteotomy has undoubtedly displaced symphysiotomy in the great majority of cases. It is very gratifying and will be very interesting to all of us to have the position of hebosteotomy and high forceps so clearly stated, absolutely discarding high forceps in cases of small pelves where the child has not descended into the pelvis, and where there is no infection. Formerly, high forceps has been a popular operation with us, and as has been said, we have been enabled to rescue some children by it, but it has also been guilty of many injuries and the loss of many children, and it is certainly fortunate that we have this new operation, one which will displace that. The only discouraging thing to me in listening to this paper is the restriction of the operation to those cases in which there is no infection. I do not question the wisdom of that contraindication, but it is discouraging because we have many cases of infection in these contracted pelves, where otherwise hebosteotomy would be indicated, if infection had not occurred, and we can not help thinking that perforation of the head of the living child is still considered necessary. Whether the perfection of the technique in a clean case will make this operation, which does not open the peritoneum, possible in some cases of infection or not, we can not say, but I hope this may be shown in the future.

Many points were brought up in this concise paper, and I shall not take time to dwell on many or any of the others, but wish to say that I was very glad, indeed, personally that the author gave so much support to the induction of premature labor, an operation I believe that is of great advantage and is discarded by those operators who are careless in the management of their cases and careless in the management of the child after birth. This is a very old and valuable operation and must be made in the future as it has been in the past.

As regards what was said about the technic, I was very much interested in the method of operation, particularly with reference to making the incision below. As to the Doederlein operation, it has certainly led to hemorrhage in a number of cases, probably due to injury of the soft parts largely, and more or less danger attends its performance. We have had reported in this city

*For abstract of paper see p. 221.

injury to the bladder from the introduction of the needle from above, and if this technic will avoid that, it is certainly an improvement that should be adopted in the future.

Dr. Joseph B. De Lee:—I believe Dr. Pfannenstiel's paper, coming as it does as a voice from abroad, is very timely, especially as it points out the dangers of neglect of the study of individual cases of confinement, with a view of preventing the accidents due to a disproportion between the fetal head and the pelvis. I think in that view alone the paper deserves the greatest recognition. In cases of contracted pelvis, as handled by the majority of men, the obstruction is only recognized after a prolonged period of expulsive labor. Then the obstruction is noticed and the proper or improper means of delivery are instituted. In cases of contracted pelves we have two courses of procedure. One is the prophylactic and the other is the curative. In the prophylactic we consider the induction of premature labor, when the woman consults the obstetrician in the early months of pregnancy, and a contraction of the pelvis is recognized. Second, prophylactic version early in labor, substituting a breech presentation for a head presentation, in the hope that the aftercoming head will pass through the contracted pelvis more easily than will the foregoing head. Third, Cesarean section early in labor, not after labor pains have been in progress for a long period of time, the patient possibly infected and certainly exhausted, and not in a good condition to withstand an abdominal delivery. Fourth, hebosteotomy as a preparatory operation even before the bag of water has ruptured, or certainly before the cervix has completely dilated and expulsive pains have been in operation for a shorter or longer period of time. Which one of these methods one adopts will depend upon the degree of contracted pelvis and the accoucheur's power of estimating the resistance that is probable between the head and the pelvis. In spite of the nice figures which we are likely to use in estimating the conjugata vera, the estimation of mechanical disproportion will always be a personal matter. A physician will estimate the size of the child and estimate the size of the pelvis, juggle the two estimations in his mind, and say, "This head will probably or will probably not go through this given pelvis," and he will select the mode of procedure accordingly.

The secondary operations are high forceps, perforation, hebosteotomy and Cesarean section. It was thought when hebosteotomy was first proposed that it would offer a mode of relief in those cases of more or less neglected labor, where the only alternative was perforation of the living child, but later experience has shown that hebosteotomy is successful in those cases only where Cesarean section would be successful, and that perhaps with a little less strict indication than in those cases where Cesarean section would be successful. This brings us back to the first proposition, that in order to get results from hebosteotomy as well as from Cesarean section one must recognize the difficulty early, and use it probably as a prophylactic and not as a secondary operation. Hebosteotomy is to be done, therefore, in those clean cases where labor has not progressed too far, where the condition of the mother is good, and where she is not infected, and where the child is in prime condition. Where previous attempts with forceps have been made, especially with the long forceps of Tarnier—the axis traction instrument—aided by powerful muscles at the other end, the condition of the child is not such as to warrant the performance of hebosteotomy as a secondary operation. Although craniotomy is a revolting procedure, still there are some cases in which we will have to do this operation. In this way I would second most heartily the indications Professor Pfannenstiel has laid down, with the emphasis on the early recognition of contracted pelvis, and the performance of induced labor in the latter months of pregnancy, if the patient refuses hebosteotomy or Cesarean section at term.

Professor Pfannenstiel (closing the discussion): With reference to symphysiotomy. I think it is displaced by pubiotomy or hebosteotomy. Hebosteotomy is very much like symphysiotomy, only it is done at another place and with better results, and so I thought it was unnecessary to speak about symphysiotomy in my paper. In former days I resorted to symphysiotomy in

some cases, but noticed that patients, after the performance of this operation, were confined to their beds for two and three months. That is a long time, in the opinion of the patients, and naturally they are disgusted with such an operation. Before doing any of these operations, I think it is very important to wait and see if the child's head will pass through. I teach this waiting to my students. We can not know beforehand. But we have a method of measuring the anteroposterior diameter which I can recommend very heartily It is the method of Bylicki. We have used this method of measurement for three years, and I have found it very satisfactory, so that with it we can say definitely the diameter is so and so, and when we say that the measurement is not one millimeter more or one millimeter less, and then we have to learn by feeling the child through the abdominal wall. I believe that if you will resort to this method of measurement, you will find more contracted pelves than you have formerly thought. Of course, minor degrees of contracted pelves are very difficult to determine, but they can be worked out. We have to find out the relation between the pelvis of the mother and the head of the child. I do not perform prophylactic version very often, but this operation is attended with good results in cases of flat pelves. That has been my experience, and I am satisfied that the majority of modern operators do not like this method. They do not make a differentiation between a flat pelvis and a contracted one. The old physicians made this differentiation more clearly, and we have either forgotten it or neglected it.

A word or two about the infected cases. I am very sorry that we can not deal satisfactorily with those infected cases. The case to which I referred in my paper was among twenty-seven on which I operated. Although the patient had fever, I was encouraged by the good result I obtained.

Dr. R. B. Preble read a paper on Clinical Differentiation of the Various Types of Aortic Insufficiency.

DISCUSSION.

Dr. Robert H. Babcock:—It would be difficult to add anything to the paper just read, but it seems to me there are one or two points which can be amplified with advantage. The essayist has pointed out that the dangers in the arterial type of this disease are due largely to the fact that the valvular changes are progressive, that also there are vascular changes which modify the effect upon the heart, and that the heart muscle suffers from coronary sclerosis. That is true. But there is another fact which may be dwelt on. The recent experiments on dogs, published by H. A. Stewart, prove that the effects of aortic insufficiency upon the wall of the left ventricle are due not to the regurgitation as such, since the amount of blood which regurgitates is small and can be practically neglected, but to the fact that the leak has transferred the pressure from the aorta to the ventricle and thereby increases the ventricular tonus. So long as the heart muscle is sound, its tonus is increased and can be maintained. This is eminently true of the bacterial or endocardial type of disease, and this accounts for the fact that we discover in these cases such enormous hypertrophy on the part of the left ventricle, and that the life of the individual is maintained for so long a time. When, however, the heart muscle has become degenerated as the result of a general vascular decay, the ventricular tonus can not be maintained, and the result is that the ventricle readily yields to the pressure to which it is subjected.

Another point which influences the prognosis also is the fact that an aortic insufficiency produces, according to Stewart, a reflex inhibition of the vasomotor centers, with consequent dilatation of the arterioles. This leads to a great fall in systolic blood pressure, which fall in blood pressure is not diastolic, as we have supposed, and due to the amount of blood regurgitating into the ventricle, but really systolic and due to the outflow into the capillaries. Just so long as this outflow into the capillaries is promoted by vasomotor dilatation, the ventricle is in a certain sense relieved. In these cases we get the most marked Corrigan pulse. When the arterioles do not empty themselves suddenly

and readily during systole, there is peripheral resistance, and this still further intensifies the effect upon the left ventricle.

In the purely endocardial type, arterial degeneration has not taken place; the vessels respond readily and there is an easy outflow into the capillaries, with partial relief to the ventricle. In the sclerotic type of the disease, on the contrary, the arteries do not respond in the same manner or to the same extent at all events, and we frequently find in these cases that the collapsing pulse is not so well marked. The vascular signs are not so pronounced as Dr. Preble has stated, and this is one of the great reasons why, in this type of disease, the ventricle suffers still more than in the other type. This has a bearing upon treatment, because when the outflow into the capillaries is not easy, vaso-dilators are called for, and experience proves every day that in the arterial type of the disease few remedies give the patients so much relief as do the vaso-dilators, such as nitrate of sodium, when the heart, beginning to falter and show evidence of strain, will regain a certain measure of tone, especially if digitalis or strophanthus be cautiously used, as suggested by the essayist.

Dr. Edward F. Wells:—I take it that the keynote of Dr. Preble's paper is the importance of differentiating these two types of aortic regurgitation, because of the prognosis and therapeutic contingencies; and the point is certainly well taken, and I think it well to have this matter again brought before the profession.

The statement made that in the bacterial infections the aortic valve is more prone to be affected in the aged than in younger life, may be true. I am not prepared to pass on this subject. However, the explanation given may or may not be true. I believe that in addition to any degeneration lesions which may be present in the aortic region, one should, in the cases under consideration, always reckon with the virulency of the infecting organism; as, for instance, in pneumococcus infection. With the pneumococcus demonstrable in the circulating blood in an extremely large proportion of the cases of pneumonia, and probably present in all, and the frequency with which arteriosclerotic changes occur in the aged, were the theory of the essayist correct one would expect to find in senile pneumonia a very large proportion of complicating endocardites. Experience, however, is not in accord with that assumption. I believe that, theoretically, the virulency of the organism should be here given due consideration. This may also be inferred from another standpoint, that is in a considerable number of pneumococcal infections of the aortic valve, not only is this valve infected, but other organs are likewise infected, as, e. g., the joints, the serous surfaces, etc.

Dr. J. F. Hultgen:—This is the first clear exposition of this disease we have had before the Chicago Medical Society, and I think it is a useful one. I remember, as a medical student, that this differentiation was not taught, and I had to look for it elsewhere; personally, therefore, I am grateful to Dr. Preble for so clearly differentiating between the two conditions.

M. Huchard calls it Hodgson, and the French, particularly Paris clinicians, refer to it as *maladie de Hodgson*. In 1857, Hodgson published a report of a number of cardiovascular cases which he could not classify under any particular head. He did not give it this name, but a clear, concise description, and Huchard, in 1886, called the disease aortic insufficiency, Hodgson type, in memory of the English clinician.

In regard to the semiology, I do not think we should omit the bulbar changes associated with arteriosclerosis. For instance, there is in general arteriosclerosis, aortitis and arteriosclerosis of the basilar arteries. Nowhere in the system do these changes show themselves better than in arteriosclerosis of the bulb. You have not only myosis, but also stenocardial attack in arterial aortic insufficiency. It has often struck me that the anginas of these patients resemble those of the pectoral crisis of locomotor ataxia. We have similar bulbar physiologic and pathologic changes in both diseases.

With reference to the therapy, I consulted Dr. Preble about the treatment of this condition a year ago. I was utterly helpless, and I don't feel comfortable yet. We can not do much with vaso-dilators, such as nitrite of sodium and

potassium iodid. The prognosis is unfavorable. The disease must be recognized early, if anything at all is to be done for these patients. They should be told to lead a life of ease, and, of course, to take other precautions as well. That is about all we can do for them. Huchard emphasizes this in these two conditions by saying that in bacterial aortic insufficiency the heart closes the scene, while in the arteriosclerotic form the brain closes the scene.

Dr. Preble (closing the discussion):—I would like to say a word or two in closing with reference to the remarks made by Dr. Wells concerning pneumococcus endocarditis. I quite agree with him that the virulence of pneumococci has something to do with the causation of endocarditis, but I am rather inclined to believe, in opposition to Dr. Wells, that it is not the pneumococci of high virulence which attack the heart valves, but the pneumococci of low virulence. Pneumococci of high virulence resist phagocytosis, while those of low virulence are attacked by the phagocytes, either the leucocytes or endothelial lining of the vessels. It is the pneumococci of low virulence which give rise to meningitis, endocarditis, or other local processes.

Dr. F. S. Churchill read a paper on The Treatment of Meningococcic Meningitis with the Flexner Serum. Report of Cases.

DISCUSSION.

Dr. Ernest Lackner:—In connection with Dr. Churchill's paper, I wish to report a case that is at present at the Michael Reese Hospital. The patient was a young man, 18 years old, who had had cerebrospinal meningitis for seven days previous to entering the hospital. He was admitted in an unconscious condition, with very high fever, very noisy, and the prospects were that he would die. He had had the disease eight days before we gave the serum. He had Cheyne-Stokes for two days, and his death was expected at any time. The leucocytes numbered 39,000. The diplococcus was determined by Professor Herzog at the Michael Reese Hospital Laboratory. This man was given eight or nine spinal injections, the last injection being 45 c.c. With the first few injections the leucocytes were reduced in number to 22,000. The first injection did not have much effect; the temperature generally rises a few degrees following an injection. Describing Case 4 of Dr. Churchill's reported cases: This child had persistent vomiting, and after the first injection of the serum the vomiting disappeared. The child was unconscious. This man's symptoms are gradually disappearing, the temperature getting normal. It was fourteen days before he got the injection. He had at least eight or nine injections, the last one, as I have said, of 45 c.c. He is gradually improving, and to-day I think his temperature is nearly normal. He is regaining consciousness and talks. I believe he is going to get well.

I think it is reprehensible for any practitioner not to use the Flexner serum in a case of cerebrospinal meningitis, the same as it would be in a man not to use the diphtheria antitoxin in a case of diphtheria.

Dr. Edward F. Wells:—The statistical method of studying these cases is necessary for progress. At the same time, nothing can be more fallacious than statistics. However, when twelve cases of cerebrospinal meningitis treated with the Flexner serum are reported, with only three deaths; and these compared with ten other cases treated in the ordinary way, but without the serum, with nine deaths, as in the twenty-two Akron cases reported by Chase, we must sit up and take notice. There are many things, however, to be considered along these lines. For instance, it has been my misfortune, as well as good fortune, to have witnessed two epidemics of cerebrospinal meningitis in virgin soil, where it had not been known before. My recollection of these cases is very vivid indeed, and I do not believe to-day that the majority of these cases, occurring early in the epidemics, would have been influenced materially by any method of treatment. They were taken sick and died promptly. They were of the most virulent type that one can imagine. In one of these epidemics I had opportunity of seeing some of the later cases, and the virulency of the disease gradually declined; and in the occasional cases which occurred for some years afterwards

my recollection is that the mortality was not more than 50 or 60 per cent., whereas in the early cases practically every one died. Shortly after the World's Fair, when we had a mild epidemic of cerebrospinal meningitis in this city, I saw a little girl, seven years of age, whose initial temperature was more than 110 degrees. She was playing as usual out in the sun, was taken sick, and within an hour, when I saw her, her temperature was higher than my thermometer would register. During thirty days the temperature was persistently above 105 degrees, provided it was not reduced by medical means. There was the most profound prostration, delirium, mental irritability, paralyses, contractures of the joints, great emaciation, etc. This patient is now a young woman, and in perfect health, without anything to show she had this disease.

One of the cases referred to by Dr. Churchill, in the Cook County Hospital, in my service, has been studied with great care, and I wish to say, as an important point in the serum treatment of this disease, that there are at present notable evidences of the benefits having been effected. To be sure, therapeutic measures may be of the greatest possible use without our being able to demonstrate that they have any effect whatever, as, for instance, the effect of quinin on malaria, before that organism is discovered. In this case certain definite results were noted following the injections, as, for example, a marvelous lowering of the leucocyte count in the cerebrospinal fluid, and other effects as well.

Dr. Stocking, who has had charge of the case, can describe those effects better than I can, and I will ask him to do so.

Dr. Fred F. Stocking:—With reference to the case mentioned by Dr. Wells, in which we used the Flexner serum, I will say that when spinal punctures were made we made an effort to count the leucocytes found in the serum. In the first puncture that was made the cells were found to be clotted together solidly, so that they could not be counted. The second time we used the serum from the spinal column there were estimated to be half as many cells to a square millimeter of the serum, and the fourth day there were by actual count 80 cells to the square millimeter. This, it seems to me, is something that is definite. It is true, these cells in the spinal column may have been diluted some by 30 c.c. of clear solution, but not to such an extent as was suggested by the counts. Then, too, another thing that is definite is something which seems to be the direct result of the serum in this case, namely, the fall in the leucocyte count as shown by the charts. That is something that it seems to me can be definitely brought out with the case in point. The first leucocyte count was 22,000. On the fourth day of the injections the leucocyte count was 8,000, which is certainly a very rapid fall.

There is one important feature which might be discussed in connection with the injection of the serum as a matter of interest in this particular case as it seems to suggest the irritation of cerebral centers that may occur when intracranial pressure goes above or below normal. On the second attempt, we removed 42 c.c. of serum, and were able to inject only 30 c.c. The boy did not have any discomfort on the removal of the fluid until we had passed 30 c.c.; then there was complaint, and by the time we had reached 40 c.c. he was very wild. It required everybody near him to hold him, and keep him quiet in order to inject the serum. But with the injection of the serum he began to quiet down, and by the time we were through injecting or reintroducing 30 c.c. of fluid he was sound asleep. On the day of the third injection, for some reason we were unable to obtain more than 4 c.c. of fluid; however, 30 c.c. of the serum was introduced. The boy complained bitterly of pressure for the next two hours. He complained of pain in the legs and head, and retraction was more marked. After two hours this condition subsided and he became quiet. And he went on to rapid recovery, all symptoms disappearing shortly after the last injection, except stiffness of the neck and Kernig's sign.

Dr. Maximilian Herzog:—The most important thing in the use of the Flexner serum at present is the diagnosis. If this serum is specific, it can only be used in cases of cerebrospinal meningitis due to the diplococcus intracellularis

of Weichselbaum. In the cases which have not been diagnosticated as such, and which had to be included in the statistics, the serum ought not to be used.

I have seen the two cases referred to before, in one of which I made a bacteriological diagnosis. The other case was the one that has been referred to by Dr. Lackner. The patient was a young man, 18 years old, I think, and was brought to the Michael Reese Hospital with cerebrospinal meningitis. It is now three weeks ago. There were 30 c.c. of cloudy cerebrospinal fluid obtained on Saturday evening. Unfortunately the case did not come into my hands until Monday morning. I made an examination, found the diplococcus intracellularis, and the serum was used on the patient, but only 15 c.c. This did not have much effect. Then 30 c.c. was given. The patient was in an almost hopeless condition, unconscious, had all the symptoms and signs of complete cerebrospinal meningitis, and could not be aroused from his unconscious condition. The serum was full of leucocytes and diplococci, and after increasing doses and finally using 210 c.c. of the serum, the cerebrospinal fluid has cleared up so that now it contains very few polynuclear leucocytes, but a large number of mononuclear leucocytes. So it seems the patient is getting well, but, of course, is in a very feeble condition.

We have a supply of the serum, and we can place it at the disposal of any practitioner who wishes it.

Dr. Ernest Lackner:—I will say that the Flexner serum is followed by results similar to those obtained from the injection of diphtheria antitoxin in cases of diphtheria. In the fourth case reported by Dr. Churchill about twelve days after the child had fully recovered from the attack it was stricken with high temperature and had a marked urticaria, somewhat similar to the condition we sometimes find following the use of diphtheria antitoxin. In the case of the young man we have in the Michael Reese Hospital, following the injections he developed suddenly swelling of the cervical connective tissue of the neck on both sides anteriorly, so that it seemed almost like a case of mumps. The swelling, however, was not in the region of the parotids, and did not interfere much with respiration. That condition has subsided, but he also got a swelling around the left hip joint, which has subsided. These were the local symptoms that were caused by the injection of the serum most likely. The possibility of a secondary infection must be kept in mind.

Dr. J. F. Hultgen:—I was fortunate enough to see this case with Dr. Streich, and knowing its course, I made notes on it. I saw the case twice a day for four days. At the start the temperature was 107°, that is, it was 102° in the morning, and in the evening at five o'clock it was 107°. Pulse 150. The patient had the typical symptoms of cerebrospinal meningitis. Dr. Streich made a clinical diagnosis of meningitis and later by exclusion we considered it cerebrospinal meningitis. There was no reason to suspect tuberculosis. Dr. Lackner confirmed the clinical diagnosis. The bacteriological diagnosis was made by Dr. Streich and was confirmed by Dr. Herzog. With the diagnosis thus established, we injected the first dose of Flexner serum, about twenty hours after the onset. The temperature then was 103°. Pulse 160. Respiration, 50; coma, opisthotonus and marked Kernig's symptom. After this first injection the temperature not only declined, but remained down, and did not rise again until the ninth or tenth day, when the advent of urticaria and of joint symptoms rose to 102½°. The second serum injection was given 36 hours after the first with a temperature of 100; pulse, 130; respiration, 40; mind clear, but slight strabismus. Third and last intraspinal injection of Flexner serum on the fourth day. The blood findings were fairly complete in this case. (See below.) I made bacteriological examinations repeatedly, and also made three punctures. The first fluid withdrawn was bloody and amounted only to twenty drops. The second fluid withdrawn was bloody and purulent, and the third, clear, transparent, but not quite limpid.

	Polymor.	Small Mono.	Large Mono.	Eosins.	
1. A half hour before 1st serum; 19,800 total w. b. c.....	91	8.7	0.3	0	510 w. b. c. counted.
2. Twenty hours after 1st injection: 15,000 total w. b. c...	83.3	15.3	1.6	0	490 w. b. c. counted
3. One hour before 3d serum dose, 4th day; 12,600 total w. b. c.	71.5	24.	3.5	1	390 w. b. c. counted.
4. Ninth day of disease; 13,200 total w. b. c.....	77.7	19.5	2.3	0.5	420 w. b. c. counted.

Accession of urticaria gigans, arthralgia, temperature, 103; pulse, 120; mind clear; spinal rigidity nearly absent.

Note the proportion of polynuclears to the others; absence of eosinophiles during first 3 days, and the gradual re-establishing of the leucocytic equilibrium.

The fall in the polynucleosis and leucocytosis is not as marked as one would wish to see it.

Dr. A. Belcham Keyes:—I am very much interested in this subject because here we are dealing with a serous membrane very much like that of the peritoneum, and in considering the meninges I was wondering whether it would be possible under certain conditions to apply some of the ideas to the peritoneum. I remember in my early hospital days the controversy that was had over diphtheria antitoxin, and the question where to inject. Can there not be a difference of absorptive power in the meninges under different conditions? Whether or not under certain conditions the intrameningeal injection of Flexner's serum would give variable results on account of the interference with resorption due to the inflammatory changes? I throw that out as a suggestion. We know that in the peritoneal cavity, if we inject material under certain conditions of inflammation we get much less resorption than when the normal power of resorption is present. A 150 pound man in one hour will absorb about six quarts of ordinary saline solution through the peritoneum, but under abnormal conditions, when the stomach and stigmata are closed by fibrin the absorption is much slower or may be hindered entirely. From this one might argue that early intrameningeal injection would give results, while a late intrameningeal injection might not.

Dr. Churchill (closing the discussion):—The cases cited by the speakers are interesting, but there are many questions still to be worked out. I wish to emphasize what Dr. Herzog said in regard to the diagnosis. In reference to the importance of the meninges, it is very essential to resort to lumbar puncture, and then if we get a slight response or reaction we should inject the serum. Flexner advises the use of the serum just as in diphtheria, and tells us not to wait for a bacteriologic examination before resorting to the injections, but obtain that afterward. No harm will be done by giving the injections, and it will save time in case a bacteriologic examination verifies the clinical diagnosis. That is comparable to the practice we all follow in the use of diphtheria antitoxin, in that we do not wait for a bacteriologic examination in a case of suspected diphtheria, but give the antitoxin, if the case clinically looks like diphtheria.

Regular Meeting, held May 14, 1908.

Regular meeting, held May 14, 1908, with the President, Dr. H. B. Favill, in the Chair. Mr. G. B. H. Moynihan, Leeds, England read a paper on Diagnosis and Surgical Treatment of Duodenal and Gastric Ulcers.

DISCUSSION.

Dr. B. W. Sippy:—I do not take it that our distinguished guest intended to wipe the medical side of the question off the slate entirely. The paper dealt with the surgical treatment only and was not intended to appeal to the medical side of the subject. Relative to the frequency of duodenal ulcer, there is a growing belief that it is very common, and that it is becoming more so. Some of our best authorities believe that it is present nearly as often as ulcer of the stomach. That is based entirely on experience, disregarding entirely the statistics compiled for years at the postmortem table. The cases studied number about 2,500. In one group ulcer was present in 33 per cent. on the lesser curvature; 32 per cent. on the posterior wall; 14 per cent. at the pylorus; 6 or 8 per cent. on the anterior wall; 6 per cent. at the cardiac orifice; 3½ per cent. on the greater curvature, and 3½ per cent. on the fundus. Estimating now that every one of these pyloric ulcers was a duodenal ulcer primarily, I fail to see where the frequency of duodenal

ulcer comes in, although the frequency of this form of ulcer, as shown by these statistics extending over a period of many years, collected by many observers, is much greater than we supposed it was, but we are not ready to admit that it is as common as gastric ulcer.

Relative to the symptoms of duodenal ulcer coming on two hours after eating, being relieved by the taking of food; pain that continues until the next meal; that recurs at night; these are all symptoms characteristic of gastric ulcer, and I defy anybody to differentiate accurately between duodenal and gastric ulcer on the basis of these symptoms alone. It is unfortunate that we have no more accurate means of differentiation, but the symptoms as enumerated are just as frequent in duodenal as in gastric ulcer, and they are in no way characteristic of duodenal ulcer. Gastric ulcer has been shown repeatedly to be associated with such symptoms caused by the irritation of the raw edges of ulcer, coming on after food is saturated with gastric juice. The pain comes on two or three hours after eating as often in gastric as in duodenal ulcer. The same relation exists in both instances to the heavier the meal the later does the pain come on and the less is its severity. The larger the meal the more albumin it contains and the more acid is taken up and the later the onset of the pain.

Relative to the indications for surgical treatment, I believe that among the more conservative surgeons it is generally admitted that gastric ulcer of a few weeks' or months' duration heals readily under the influence of intelligently applied medical treatment. I believe that the opinion is growing stronger that the surgical treatment of gastric ulcer is applicable rather to the complications of the disease than to the disease itself, conditions that are largely mechanical and relievable and removable by surgical procedures. If such is the case, the diagnosis of gastric ulcer must take into consideration the following points: Is gastric ulcer present? Are the signs and symptoms sufficient to permit of a diagnosis of gastric ulcer? If so, what complications are present? Is there reason for believing that malignant disease is present in association with the ulcer? Is pyloric obstruction present, and if so, is the obstruction due to actual cicatricial narrowing of the pylorus or to spasm of the pylorus incident to the ulcer in the pars pylorus, a closure due to spasm of the muscle, which is not at all rare.

Those two conditions must be differentiated in such cases. Again, is continued secretion present? This should be part of the diagnosis in every case. Nearly all of these conditions may be determined readily. If continued secretion is present it will prevent healing of the ulcer, and it is this continued secretion that causes the pain at night, the secretion digesting the ulcer and irritating it. Are perigastric adhesions present? They may be producing the pain or interfere with the motility of the stomach. Is perigastric abscess present, or hour-glass contraction or other deformity which may be interfering with the motility of the stomach? Having determined the conditions as pointed out, we should also determine the probable age of the ulcer. The older the ulcer the broader, the more indurated are the edges, the deeper the ulcer, and the more difficult to heal it. The location also influences the prognosis. Ulcer at the cardiac orifice or at the orifice does not heal as readily as ulcer elsewhere. When the ulcer is located on the anterior wall there is greater danger of suppuration.

After having determined these points, and not until then, are we in a position to advise whether medical or surgical treatment should be instituted in a given case. There is no question but that surgical treatment should be instituted in every case where perforation is present and where high grade pyloric obstruction is present caused by cicatricial narrowing of the orifice, unless there is some contraindication, like old age, and it is remarkable what can be done in inoperable cases in the way of treating these patients by carefully regulated medical treatment. Then there is no question that operation is indicated whenever we have a good reason for suspecting malignant disease in addition to the ulcer and when perigastric abscess is present, perigastric adhesions interfering with motility, or pain that is not controlled. Certain cases of hemorrhage demand surgical treatment, but it is difficult to determine just which cases of hemorrhage should be treated surgically. The vast majority of cases of hemorrhage are best treated medically, but in certain cases the surgeon must be called or life will be lost

About 15 per cent. of the fatal cases from hemorrhage occur before the surgeon can be called. Thirty-five per cent. of deaths from hemorrhage occur in from twenty-four to thirty-six hours after the onset of the hemorrhage. Some of these cases should be saved by the surgeon by early operation. Then 50 per cent. of deaths occur in cases where surgical treatment may be of value, cases of constant oozing. Careful medical treatment should be instituted, and we should not allow hemoglobin to sink lower and lower before operating, but operate as soon as it is seen that medical treatment will not control the oozing. It is difficult to say just when to operate in these cases, but by careful watching we can arrive at a satisfactory conclusion. But the majority of cases are best treated medically, about 90 per cent.

When these conditions are present there is no question that surgical treatment should be instituted. In all other cases I believe it is equally certain that surgical treatment should not be instituted until after carefully applied medical treatment has been carried out. Many failures have come from inefficient management. The physician has not taken it seriously enough; he has not given the patient to understand that he must co-operate enough and long enough. If no greater skill were used in the surgical management of ulcer than is used in the medical treatment, the mortality of surgical procedure would be frightful. If symptoms of gastric discomfort have been present for years, if ulcer has been continuous during that time, we are going to have great difficulty in getting it to heal medically. Such cases should be analyzed as to whether there is recurrent ulcer. Many such cases occur. Periods of comfort, followed by periods of discomfort, means recurrence of the ulcer. Then the question arises, how long has the ulcer been present. If not too long, it is amenable to medical treatment. If medical treatment has been given a fair trial and the symptoms persist or return, then the question of surgical treatment should be taken up and considered seriously. If the patient is poor and can not carry out the medical treatment long enough, surgical treatment should be adopted in most cases. If the patient can carry out the treatment longer he may choose between surgical and medical treatment, but we must not temporize too long.

Gastroenterostomy has not done as much as we hoped for, but in cases that do not get along under medical treatment, the surgeon should perform an exploratory laparotomy with the view of excising the ulcer. It must be understood that there are certain cases of gastric ulcer that will never get well under surgical treatment, but under combined surgical and medical treatment they may be made comfortable. Death from ulcer takes place as the result of hemorrhage, infection or perforation. Perforation can be controlled by the surgeon; hemorrhage frequently can.

Dr. A. J. Ochsner:—It is quite impossible to discuss all of the important points in this paper. We have for many years learned much of what we know of this condition from Mr. Moynihan's work, so that it is out of the question to discuss the surgical aspects of this paper. Concerning the diagnosis, especially the differential diagnosis between gastric and duodenal ulcer, I believe that Dr. Sippy's statement that the symptoms mentioned by Dr. Moynihan may indicate either gastric or duodenal ulcer is correct, but we must bear in mind that the surgical and medical diagnoses differ. I would not hesitate to accept the diagnosis of the experienced surgeon who has operated several hundred cases because he has had to prove his diagnosis in the living patient at the time of operation. I would add to what Mr. Moynihan said, that if the pain is greatly increased on pressure in the median line I would expect to find the ulcer on the gastric side of the pylorus. If deep pressure to the right of the umbilicus and a little above increases the pain, I would expect to find the ulcer in the duodenum. My personal experience has not been as great as that of Mr. Moynihan, but I should expect to make but very few mistakes in diagnosis, and I should expect to prove the correctness of the diagnosis at the operation in nearly all of these cases. We must remember, however, that the patients that come to the surgeon are not the patients that come to the internist. They are the late cases, the cases that have existed for a long time. It is seldom that the surgeon sees a case of gastric ulcer that has not been treated by one or more practitioners before and for that reason we would be but poor diagnosticians if we should not be more positive about our diagnosis.

Regarding the conclusions that Mr. Moynihan made, I believe that they will be borne out by practice for many years to come. The experience that has been accumulated by men who operate on the stomach frequently is so considerable that there are certain facts which have gone beyond the experimental stage. Mr. Moynihan advises to operate only when we have a demonstrable lesion. This fact was unknown until it was demonstrated by men like Moynihan, Robson, Mayo, Murphy and others, who have done so much work in this line. There are physiologic reasons why we should not operate on a case in which we can not demonstrate a pathologic condition. We have in the stomach and duodenum a very carefully arranged machine. Any operation performed on this machine will disarrange it, so that if we have not a lesion which has of itself seriously disarranged the machine, the chances are that the machine can be restored without operation to a fairly normal condition, a condition which is very much more nearly normal than is the condition which will result if we do a gastroenterostomy. The stomach is a storeroom, an apparatus for the secretion of digestive ferments and hydrochloric acid, a mixing and grinding machine. If a gastric ulcer prevents the grinding of food because of its location in the pyloric end of the stomach and the obstruction caused by the ulcer prevents the organ from emptying itself, we have a distinct indication for operation in all cases that do not recover permanently under dietetic treatment. I believe that all agree that we should prevent the occurrence of perforation, and if we study the condition of ulcer of the stomach and duodenum thoroughly, we should ordinarily be able to do this by diagnosing and treating the gastric ulcer properly before perforation can occur. Regarding the excision of ulcers, there is still a considerable amount of uncertainty. Recently there was introduced an element by Mr. Cameron which, while it has been known for a number of years, was not brought out with sufficient force until now. He has shown that the introduction of alkaline fluids into the stomach causes the stomach ulcer to heal. Every one who has operated on many cases has found that ulcers of the stomach which in themselves did not obstruct the pylorus, but invaded the pancreas, or became so thoroughly adherent to the posterior parietal wall that excision was impossible, would heal as a result of gastroenterostomy. I believe that every surgeon has performed gastroenterostomy hoping to reduce the accumulation of irritating acid stomach contents in that manner. My personal experience has been that notwithstanding the fact that there was no obstruction to overcome, still a gastroenterostomy in these cases has resulted in a perfect healing of the ulcer. How did this happen? There was no possibility of benefit, except from the fact pointed out by Mr. Cameron because the pylorus was wide open and the gastroenterostomy simply favored the introduction of alkaline fluid in the form of bile and pancreatic fluid as pointed out by Mr. Cameron. I believe that because of this fact excision of gastric ulcer may become less desirable and less frequently done than in the past few years. There are a few men, and foremost among them is Mr. Moynihan, from whom we have learned our stomach surgery.

Dr. Frank Billings:—I think that gradually we are coming a little nearer together, the medical man and the surgeon. We have discussed this subject every year for five or six years, ever since surgery stepped into the field. We of the medical side are, I think, more surgical, and the surgeons are more conservative than they were five years ago. There will be differences of opinion between us until the time comes when pathology shall teach us the cause of ulcer. The longer I practice medicine the more uncertain I become about some things. I am not nearly as sure as I was twenty years ago. I can not agree with Dr. Sippy about the certainty with which he has expressed himself concerning the medical knowledge of the location of the ulcer or as to its age; nor can I agree with our guest and my surgical colleagues when they are so positive in their statements concerning the ulcer location with or without stomach analysis. Ulcers are peculiar in the stomach, and I think our differences of opinion and want of knowledge and our positiveness and hesitancy depend somewhat on that. A chronic ulcer may be latent for years and have periods of activity when the symptoms are prominent and others when the patient appears to be perfectly well. One of the most important things in the diagnosis of ulcer of the stomach is a good history. I think that is borne out by every man who has had experience with these patients.

Now, as to the diagnosis, and also bearing on the prognosis and treatment. If a patient has suffered from symptoms of chronic ulcer for seven, nine, twelve or even fifteen years you will not hesitate to place that patient in surgical hands. So that the history is important, perhaps as important as any other one thing in the diagnosis.

As to the diagnosis of duodenal ulcer, I must agree with Dr. Sippy. If you compare the statistics of Welch, who did not make his statistics entirely from his own work, but from that of others, while these statistics are made up from post-mortems, we are a little bit doubtful about them when we have such men as our guests, the Mayos and other surgeons, who say that they find duodenal ulcers so often. Therefore, I am in doubt, on the one side, as to the literature, and am inclined to believe that the condition is more frequent than medical men suppose.

I am very glad to hear what Mr. Moynihan said about symptoms and what Dr. Sippy said about gastric ulcer, especially ulcer near the pylorus, but I have had patients with duodenal ulcer who had no pain at any time. They had other symptoms, such as deficient motility, fulness in the abdomen and discomfort for a long time after eating, but they had no pain. I saw a patient some years ago who was operated on. I was called into consultation because the man had a pleurisy with effusion. His physician withdrew some fluid and it was purulent. In a few days the man had a swelling in the region of the gall bladder. A few months before the man had pain in the abdomen. A surgeon pronounced it appendicitis and advised operation, which was refused. He became better after a few days' rest in bed. Then he had pain in the right side, and the doctor found evidences of fluid in the pleural cavity, and a few days later he withdrew the purulent fluid. I examined the abdomen and found a swelling in front under the ribs. It was tympanitic and a distinct mass. Then I went back to the history and was able to make a rational diagnosis of perforating ulcer of the duodenum, subphrenic abscess and involvement of the pleura. Dr. Andrews operated and found that to be true. I would like to have Mr. Moynihan tell us whether in the cases he has seen since 1905 he has noted this fact, that pain may be absent. I have noticed one symptom in duodenal ulcer that is not mentioned in text-books, and Dr. Mayo confirmed my observation. The patients have in the night most frequently a gulping of fluid, either bitter or sour, and rarely, if ever, have they ulcer of the stomach. I think that that is a most significant thing in duodenal ulcer.

I was also gratified to hear Mr. Moynihan's paper to-night. He and other surgeons are coming right around to a sensible stand on the technic. When for years and years we turned over a patient to the surgeon, he did a gastroenterostomy and sent the patient back to us. I have had all kinds of trouble with such patients. I have become a bugbear to the surgeons from constantly saying that if the disease does not involve the pylorus they had no business to do a gastroenterostomy. And what Mr. Moynihan said to-night I was glad to hear, and that is that, if the pylorus is involved, perform a gastroenterostomy, and, if the ulcer is elsewhere in the stomach, remove it, but leave the normal mechanism of the stomach as it is.

I believe that there is a medical treatment for ulcer. If the case is recent put the patient to bed. Feed him as he should be fed, and medical men differ somewhat in that, although I do not believe that it makes much difference. Stop the secretion of the stomach, pump it out, removing the free secretion at least twice a day, and leave in the stomach an alkaline fluid. In three or four days the stomach ceases to secrete the acid gastric juice and the patient suffers less discomfort. Give enemas of salt solution and then begin feeding slowly with milk and lime water and watch the patient until he can take soft food. Watch these patients not one month, but three months, six months; watch them, examine them. If that were done by enough of us for a certain time we could speak with more positiveness.

I agree with Dr. Sippy when he says that the majority of medical men do not give the treatment properly, and that if surgery were done in the same manner as the medical treatment the mortality would be frightful. I believe that a chronic calloused ulcer is a surgical case, and I believe that we could prove that

this is so by long enough observation of medical treatment. I want to congratulate Mr. Moynihan, from whom I have learned much to-night.

Dr. John B. Murphy:—I wish, first, to compliment the essayist on his arrangement of his facts. He had no theory to support; he gave us a citation of facts, and the very presentation of them is an evidence of the care with which his cases were analyzed. The immediate results are striking; the remote results are still more striking. That a patient should recover from an operation is one element; that a patient is well after an operation is another element, and it is the final results that make this paper a milestone in surgery of the duodenum and stomach.

The question as to what class of cases are surgical and what class of cases are medical I believe that on that point the surgeon and the medical man are agreed. I am sure that Mr. Moynihan did not for one moment intend to imply that acute gastric ulcers or those occurring in the young were surgical cases. Not at all. There is an element in the statistics of the postmortem room that is accurate, when you consider the enormous number of gastric ulcers that occur in young girls, young people, and that heal under medical treatment. They are recorded twenty, thirty or fifty years afterward in the postmortem room as ulcers of the stomach. That is an entirely different condition from the patient who is referred to the surgeon because of a chronic ulcer, and unfortunately he catches a number of the cases of neurosis with gastric symptoms. And he catches still another type, more disagreeable, the patient with a symptomatic ulcer, who presents all the typical symptoms that make up the clinical picture of gastric ulcer. He operates on that patient, but fails to find any ulcer. Formerly he did a gastroenterostomy, and the patient was a wall-flower in his office from that time on. We have all had that experience, but now physicians and surgeons are agreed that a gastroenterostomy should not be performed unless there is a palpable ulcer, and, from my personal experience, I would say that no operation should be done unless that ulcer interferes with the outlet of the stomach.

If there is large, calloused ulcer of the stomach—and they are common in the class of cases referred to us—I have not become as surgical as has Dr. Billings, and I believe that in these cases we should do a gastroenterostomy. Some of them can and should be excised. I arrive at a conclusion as to the surgical procedure on about this basis: The great majority of gastric ulcers are in the neighborhood of the pylorus, where they interfere with the grinding and outlet of material. That class of ulcers, when chronic, old and indurated, demand surgical treatment of a radical type for a permanent cure. Whether it should be a gastrostomy or gastroenterostomy has not been settled definitely, but if it was my stomach it would be a gastroenterostomy. If that did not relieve it, then we have established a connection between the stomach and intestine and we can do a gastrostomy later. I feel that that would be on the side of caution and of a saving of hazard to the patient.

One can not help but feel impressed with the statements on the diagnosis. Who can write a book on diagnosis? That man has not yet demonstrated that he was born. Diagnosis is a personal element. We get something that we know, and we know it as no one else knows it, and we can not tell it to any one else. When you have seen one or two hundred cases of duodenal ulcer, with a demonstrable lesion present, and you have operated in all these cases and found the ulcer, you get a conviction in the diagnosis of that particular subject that you can not impart to others so that they can make the same diagnosis. I wish that I could feel the same conviction in the diagnosis of duodenal ulcer that I have about appendicitis. I am free to admit that the large number of duodenal ulcers have passed through my sieve. Therefore, it seems to me that the surgeon and the medical man are a unit; that the pyloric and the duodenal ulcers—a large percentage of the latter and probably all of the former—are surgical cases, while the acute gastric ulcers are probably all medical.

Mr. Moynihan (closing the discussion):—Once upon a time three men, representing three great nations, were asked to write a description of a camel. They were a Frenchman, a German and an Englishman. The Frenchman put on his newest suit of clothes, donned his brightest tie, selected his best girl, and spent an afternoon at the zoological garden, and went home and described the camel.

The German retired for profound study to his private chamber. He had ordered in very large quantities of the fluid customary to this intellectual exercise in that particular country; he got a large pipe and a considerable feservoir of tobacco. He took down volume after volume from a well-lined library, and looked up the statistics as to the numbers of camels born in various parts of the world, the anatomy of the camel, physiology, habits, and in various other directions endeavored to find out what had been written by great authorities on the life and habits of the camel. He produced an exceedingly learned treatise about the camel.

The Englishman took a boat across the Mediterranean and went to the desert. He bought a few camels, traversed the desert with them; he fed them, groomed them, rode them, lived with them, and learned everything there was to be known about the camel by association with it. He returned home and wrote a treatise about the camel. That is a parable. I will not endeavor to point out who is the general practitioner, the physician and the surgeon in the camel of the duodenal ulcer, but I want to say that I very deeply appreciate the way in which Dr. Sippy put a very bad case.

Dr. Sippy quoted statistics by one of the greatest authorities, and he said that we can not ignore those statistics. I should be the last person in the world to ignore statistics. I look with the greatest regard on the illustrious men who worked in this field before I was born. Who would ignore these satistics? But I will give you an evidence of what statistics can do when cultivated from the postmortem room. A very good friend of mine, Hale White, of Guy's Hospital, read a paper before the British Medical Association last July, the address on medicine. He said that in forty years in Guy's Hospital they had had thirteen thousand odd autopsies. There is probably no hospital in the world where postmortem examinations are made with more careful scrutiny of every part of the abdomen than at Guy's. In forty years there was found at Guy's only one case of stone in the common bile duct. Dr. White says that patients with stone in the common bile duct do not die; therefore, when a patient comes with stone in the common bile duct, he should be advised not to have an operation done because he will get well without it. It is really a very serious position for a great physician to take.

General practitioners have told me that they have had several patients die with stone in the common bile duct because they refused operation. I have known two such patients to die. Now, that is the fallacy of postmortem statistics. I do not ignore them. I want to emphasize them because I want to point out their fallacy. If you base your information on the postmortem room findings, you are building your house on the sands.

There is a pathology of the living, and I want to emphasize that it is the pathology of the living which it is our business to study. This applies to duodenal ulcer and many other things. I have looked up the opinions expressed by the greatest living physicians with regard to this particular disease. I have read what Ewald and Boas have said about it, and I think that they have not the least idea what duodenal ulcer is. I do not think that either of them have seen a live duodenal ulcer. They have not been in the desert with the camel.

If you read text-book descriptions of the diseases of the gall bladder, especially cholelithiasis, and I have in mind one of the greatest books ever written, Professor Osler's work on medicine, read the description he gives, and you will find that he describes certain phases of gallstone disease. What are they? They are preventable complications of gallstone disease, not the gallstone disease which it is the surgeon's business to relieve. The plea I want to make is this: If you read the text-books on medicine, you will find described with perfect accuracy those symptoms which have been relieved during the life of the patient and verified at the postmortem table by the physician. It is our business to heal the living, and a new system requires to be written by the man not yet born depict-

ing the inaugural symptoms of disease. That book must be written by the general practitioner or by the surgeon, and the description must be verified with equal accuracy by the display on the operating table of the lesion which is supposed to exist. We must correlate those symptoms with the pathology of the living. I am perfectly certain that anybody with the conspicuous ability that Dr. Sippy has with regard to these things, if he will get a series of patients who give him the history I have given, and follow them to the operating table, there will be no further room for argument. I have had physicians deny most positively before I operated on the patient that there was any lesion to be discovered, and it is my custom to draw an outline of the stomach and to indicate the position of the lesion before I start the operation. That is really putting yourself up to be shot, but when you are fighting a cause like this, if you are wrong, it is your business to be shot. If I am right, I am satisfied with what I have done. If I am wrong, it will help me in the next case.

It is your business in dealing with these cases to make a most careful scrutiny of the history, to draw conclusions deliberately and to be judged by the onlooker at the operation whether you are right or wrong. I am willing to be put to this test, and you have surgeons here, than whom there is none better in the world, who will put themselves to the test.

I had to open a discussion a year ago or so before a London society and I said what I said to-night. A distinguished medical baronet said that I was wrong; that I could not make a diagnosis, although I might make a shrewd guess once in a while. Up to that moment I had operated on one hundred cases of duodenal ulcer; these patients had told me a particular story, and I had gone into the smallest details of the history, and had opened the abdomen one hundred times and had seen a duodenal ulcer one hundred times. I invited the medical baronet to come with me to see the one hundred and first case on which I was to operate the following morning. He did not come—but it was a duodenal ulcer all right.

Dr. Sippy said that the patient should be turned over to the surgeon when the physician could not help him. That is absolutely the wrong position to take. If a physician can not do a patient with organic disease of the stomach any good, that patient has no organic disease at all. It is the patient that the physician can do some good to that the surgeon can cure. The point is that the mimicry of ulcer of the stomach is so exact that there are patients where one can not say positively whether organic disease is present, but if the patient is not benefited by rest in bed, restriction of diet, etc., the patient, in all probability, has nothing organic the matter with him. If present, the medical treatment will give relief. If the patient is not benefited by that, then the physician is anxious to hand that case over to the surgeon, and the surgeon is not in the least degree anxious to have that patient transferred, and it is that particular type of case when operated on which will bring discredit on gastroenterostomy. If the patient is not relieved of her symptoms, she will merely have the character of her symptoms altered, so that she vomits bile instead of food.

I feel that it is a singularly bright day in my life when I am asked to come to Chicago and be with you. I have read your transactions with a considerable amount of diligence and an immense amount of profit. I have found Chicago superlatively characteristic of America, so far as its surgery is concerned. The most beautiful thing about surgery in this country is the enthusiasm of the people practicing it, and the fact that the men practicing it are exactly the men who should do this work. For me to come here and be in contact with the men who are doing the world's work in surgery is an immense stimulus and an immense benefit, and if there is any little thing I have said or done which will give you a thought about your work it is only 1 per cent. of interest on the large capital you have invested in me in Chicago and America. Surgery in America is going ahead of us; the work done here is colossal; it is magnificent, and the great thing about it all is that the right men are doing it.

Regular Meeting, May 27, 1908.

Regular meeting held May 27, 1908, with the president, Dr. H. B. Favill, in the chair.

RHINOSCLEROMA: REPORT OF A CASE.

STANTON A. FRIEDBERG, M.D., CHICAGO.

(Abstract.)

Rhinoscleroma is quite uncommon in the United States. The total number of cases reported will not exceed fifteen. Three cases, including the present one, have been seen in Chicago. The cause is supposed to be an encapsulated bacillus belonging to the mucosus capsulatus group. It is an exceedingly slow and progressive disease. It is characterized by the increased formation of fibrous connective tissue which is transformed into scar tissue, thereby producing extensive deformities of the affected parts. The symptoms are usually only local.

History.—Female, aged 21, married, born in Austrian Poland. She has been in this country two years. Family history negative. Previous history negative. Her present trouble began in the fall of 1907. The first symptom was a sensation of dryness in the throat, accompanied by slight hoarseness. Soon after this a feeling of dryness in the nose, with obstruction to breathing, came on. The hoarseness gradually grew worse. She began to cough; there was some expectoration; choking spells; attacks of dyspnea. At the time of the first examination the dyspnea was severe and was both inspiratory and expiratory. Cough was frequent and she complained of soreness in her throat. There was almost complete aphonia. Tinnitus aurium was also complained of. Other than the cessation of the menses and a feeling of weakness, constitutional symptoms were of a minor degree.

Examination.—Chest and abdomen negative. Urine normal.

Nose: No external evidence of the disease. The nasal mucous membrane of both sides was covered with a thin whitish secretion, which, on removal, showed the membrane to be paler than normal. On the right side the middle turbinal is adherent to the septum both at its anterior and posterior ends. The inferior turbinal has a roughened and irregularly nodular appearance. On the left side the inferior turbinal is adherent to the septum for about four-fifths of its entire extent. Opposite the middle meatus on the septum an irregular nodule is seen. At the anterior end of the inferior turbinal there is a grayish-white area resembling scar tissue. In the nasopharynx both sides showed infiltration, the right a little more so. The tubal orifices were narrower than normal. The turbinal tissues felt hard to the touch of the probe and there seemed to be an increased sensitiveness present.

The pharynx was pale and showed atrophic areas on the posterior wall. At the sides were a number of enlarged blood vessels. There was a characteristic nodule back of the right posterior pillar. This was grayish-white, three-eighths of an inch in length and one-quarter of an inch in width. Above this and extending into the nasopharynx a similar nodule was seen. The base of the tongue and epiglottis were normal.

The larynx partook of the general pallor. About the center of the right false cord a nodule was seen. The left false cord is increased in size by what appears to be a diffuse infiltration. The true cords are both involved, although the right can be partly delineated and still retains some motion. Below the cord on both sides there is a mass which extends into the trachea. This was the cause of the dyspnea and accompanying symptoms. The glottic and subglottic spaces were so encroached upon that it was with difficulty that a No. 1 Schroetter bougie could be passed. The color of the growth was gray, with a slightly reddish tinge. There was no ulceration of any of the affected parts.

Both membrana tympani were lusterless and were retracted. A culture obtained from the nose gave the so-called bacillus of rhinoscleroma.

The treatment has been unsatisfactory, but latterly some good results have been reported from the use of the *x*-ray. In this case the treatment up to a few weeks ago was merely palliative and consisted in passing a No. 1 Schroetter bougie to dilate the subglottic growth. On account of increaisng dyspnea, tracheotomy finally became necessary.

"Recent Advances in the Treatment of Tuberculous Sinuses and Abscesses, with Demonstration of Patients and Colored Microphotographs," by Dr. Emil G. Beck. "Lantern Slide Demonstration of Diseases of the Gall Bladder," by Dr. Emil Ries.

DISCUSSION ON PAPER OF DR. RIES.

Dr. D. N. Eisendrath:—This paper is exceedingly interesting and valuable to the general surgeon. We have been puzzled in a number of cases by the recurrence of gallstones after operation. At first we were inclined to believe that it was the fault of the operator, who had overlooked a stone, but we are beginning to see the reasons for this recurrence. This paper is certainly new in pointing out the possibility of gallstones forming in the wall of the gall bladder, in one of these diverticuli, as in the intestines, where enteroliths form in diverticuli. Formerly it was thought that often these stones formed in the bile ducts in the liver and wandered down the hepatic duct into the gall bladder. Undoubtedly a considerable number of stones form in the gall bladder, and this is an indication for doing a complete cholecystectomy, removing not only the gall bladder, but also the cystic duct. During the past few weeks I operated on a patient whose case illustrated the point made by Dr. Ries. The patient was operated on eleven years ago, the gall bladder being opened, the stones removed, and the bladder dropped back. He came to me recently with symptoms of cholelithiasis. I found gangrene of the mucous membrane and two calculi, showing that simply a cholecystotomy did not suffice to prevent a recurrence of the trouble.

Dr. A. J. Ochsner:—All those who have had a large experience in operating these cases have learned that there are certain gall bladders that should not be left in the patient, but this does not indicate that cholecystectomy should be done in most cases. Whenever a gall bladder can safely be left in place this should be done, because in these cases there is not only disease of the gall bladder, but also of the lower portion of the gall tract, of the hepatic duct and of the common duct. There is also in a considerable proportion of these cases disease of the liver. In these cases the gall bladder may be left in place and used for drainage. The general condition of the patient improves much more rapidly, the hepatitis subsides and the liver decreases in size. If the common duct has been injured before the primary operation so that it can not carry the bile from the liver to the intestines, the gall bladder serves as an excellent means for carrying the bile behind the mesocolon into the jejunum.

Recurrence of gallstones is not so much the result of an error in surgical technic as an error in surgical judgment. It is largely a matter of experience. At first you leave in some gallstones because you did not know how to find them. Later on you leave some of the stones in the hepatic duct, and later on you will leave some diseased gall bladder which make trouble subsequently, and after one has made a large number of blunders these become progressively less frequent. Every time we have a scientific reason given us like the one demonstrated by Dr. Ries we had best take notice. Some five years ago when Dr. Ries first called attention to this matter I placed it in the hands of my pathologic assistant, and we have been able to verify Dr. Ries' statements in a large number of those cases in which the removal of the gall bladder was indicated.

Dr. A. Goldspohn:—I would like to ask Dr. Ries whether I am correct in believing that the majority of these bladders which show this abnormal growth of glands and the formation of diverticuli and lead to the formation of embryonic gallstones in the wall of the bladder, whether these are not the small contracted

gall bladders that ought to be extirpated anyway. Dr. Ries said that the distended gall bladder, the cystic gall bladder, contains very few glands, and what I have seen of them leads me to believe likewise. If this view is correct, then this microscopic study would merely endorse what macroscopic judgment indicates. It would further denote that this work does not call for extirpation of the gall bladder as a rule, for reasons such as Dr. Ochsner cited. The gall bladder is very necessarily used sometimes for drainage, which would not be very well accomplished by extirpation.

Then we frequently get inflamed gall bladders where infection is not limited to the gall bladder mucous membrane, but there is also a pericystitis, a rather alarming condition in which drainage from within and outside around the infected bladder is needed. To attempt to remove the gall bladder under these conditions would greatly and unnecessarily raise the mortality rate. I have a number of times experienced the discharge of gallstones after the first draining of the gall bladder, but those were stones of such a size that they could never have had their habitat in the wall of the gall bladder and could never, since the primary operation, have developed to such a size from small stones lying in the wall of the gall bladder at the time of operation. We have believed that they come from other sources. We know, too, that the lumen of the cystic duct is very tortuous, and that stones often lodge there and work their way upward in response to drainage instituted up to that point. Therefore, draining such septic and dangerous cases is the safer procedure. If it should happen that we retain a discharging sinus, from experience in several cases I would say that it is possible to obliterate the sinus by packing it with iodoform gauze every second or third day for a number of weeks, and in that way we either produce health of the bladder lining and closure follows, or we obliterate the mucous membrane, and then there will be closure by obliteration of the tract. I have gone so far in two cases as to impregnate the iodoform gauze repeatedly with a 10 per cent. formalin solution, which at the time of introduction caused some pain for ten or fifteen minutes; then the packing was endured for a number of days with comfort and the result was a definite closure and cessation of all symptoms permanently.

Dr. Carl Beck:—Whether a cholecystotomy or cholecystectomy should be done will certainly never be decided by the pathologist or the ordinary surgeon, but by the man who has a chance to do not a dozen, but hundreds of such operations. But there is another factor in these cases to which I wish to call attention, and that is this: Dr. Ries has shown us something that we see more and more every day, and that is that the pathology of organs is not brought out any more by the pathologist in the postmortem room, but by the surgeon, who, during the operation, sees changes which the pathologist does not see at the postmortem. The surgeon should not throw away the gall bladders he removes, but examine them carefully afterward so that we may learn a little more about these conditions.

Dr. Ries (closing the discussion):—The discovery of these diverticula is not mine. I mentioned Luschka, and since then I published the paper to which Dr. Ochsner referred, and these observations have been confirmed by others. The operation of dissecting out the mucous membrane, as done by the Mayos, is incorrect, because it leaves the ends of these diverticula in the wall and may lead to the formation of mucous fistulas. Dr. Ochsner said that the men who do the largest number of operations would ultimately have to determine this question. These men do ectomies. The gall bladder is a convenient drainage tube, that is true, but it can be removed and you can still drain through the common duct. It is wrong to leave a diseased gall bladder, but I did not advise to remove all gall bladders.

As to whether only small gall bladders show these diverticula, I may say that one of the largest gall bladders I ever removed was full of them. I find these diverticula right along in large gall bladders. The small, shriveled gall bladders do not necessarily have to be removed. In severe inflammations the gall bladder should be removed, and precisely in cases of gangrene and ulceration of the gall bladders all authors agree that it should be removed. As to obliterating the mucous membrane by means of cauterizing substances, that is all wrong. How

can these substances get into the narrow diverticula and obliterate them? A human being does not need the gall bladder any more than he needs his appendix, but it is not necessary to remove the gall bladder unless it is likely to cause trouble.

CHICAGO MEDICAL AND CHICAGO SURGICAL SOCIETIES.

Joint Meeting.

A joint meeting of the Chicago Medical and Chicago Surgical Societies was held Jan. 8, 1908, with Dr. A. J. Ochsner, president of the Chicago Surgical Society, in the chair.

TUBERCULOSIS OF THE TONGUE.

Dr. William M. Harsha reported a case of "Tuberculosis of the Tongue" and exhibited the patient.

DISCUSSION.

Dr. Arthur D. Bevan said that in 1893 he saw a case very much similar to this. He thought it was a case of epithelioma of the tongue. The patient, however, had, as Dr. Harsha's case had, some tubercle bacilli in the sputum, and the diagnosis in that case was made by taking some scrapings from the lesion of the tongue and staining for the tubercle bacilli. He found the tubercle bacilli in the scrapings and made a diagnosis of tuberculosis of the tongue. The man had also a fairly advanced tuberculosis of the lungs. He referred briefly to a case in which the question of diagnosis was very important, and in which he had the same pathological process to deal with as in Dr. Harsha's case. The patient was a man of 50, with a lesion on the glans penis which, from macroscopic appearance, was apparently a typical epithelioma. He believed it was a typical epithelioma. Amputation was advised, a section of tissue was taken and examined, and much to his surprise and to the surprise of the men associated with him, they found it was a case of tuberculosis of the penis, resembling clinically very closely an epithelioma.

Dr. John B. Murphy congratulated Dr. Harsha on making the diagnosis before the operation. The case, as it presents itself, has all the classic forms of tuberculosis, viz., it was first a submucous tuberculosis from inoculation from a tooth, and that remained beneath the mucosa for a considerable time and the patient had an ulcer appearing on the surface, giving the ulcerative variety where the mucosa is destroyed, leaving a primary lesion and a superficial lesion, and each of the two succeeding ones in this case was in advance of that and of the ulcerative variety. The clinical course is always doubtful in tuberculosis of the tongue. It is as grave a lesion in itself as cancer of the tongue, and then we have added the original primary tubercular lesion. The prognosis is unfavorable even after the removal of as large a portion as we would ordinarily remove in a case of epithelioma of the tongue. It requires the excision of a larger portion than in excision for carcinoma to feel that the patient is free from the secondary return *in loco*.

Dr. William Allen Pusey reported a case of tuberculosis of the mucous membrane of the mouth and tongue which was recently under the joint treatment of Dr. Thomas L. Gilmer and himself, the diagnosis of tuberculosis being made by Dr. Gilmer before he saw the case.

Dr. L. L. McArthur asked as to whether an exquisite tenderness and painfulness of this lesion existed such as exists in lesions of that kind, of which he has had personal cognizance. In this case the tenderness and suffering from the lesion were to be likened to ulceration which comes from an *x*-ray burn—painful to the slightest touch. He had occasion to make a diagnosis and remove a growth of this kind from a patient of Dr. Frank Carey's fifteen years ago, and the diagnosis was made by means of the microscope. He thinks practically we have three things to differentiate in ulceration of this type. It is either epithelioma, tuberculosis or syphilis. He does not feel like agreeing with the extremely grave

prognosis that Dr. Murphy gives in regard to tuberculosis of the tongue. He thinks that the radical removal will offer a far greater hope of recovery than in cases of carcinoma.

Dr. Harsha, in closing the discussion, said it is a difficult matter to make a diagnosis from scrapings or from sections taken from the nodular or submucous type; that the tubercle bacilli are not commonly found in the tissue, and that the best way to make the diagnosis is to cut out a section from the border of the ulcer. In answer to Dr. McArthur, he said that neither the ulcers nor the primary nodules were at all painful.

THE PROPHYLACTIC USE OF FILIGREE IN INFECTED WOUNDS OF THE ABDOMINAL WALL.

Dr. Willard Bartlett, of St. Louis, Mo., read a paper (by invitation) on this subject.

He reported thirty-two cases in which he had used filigree, and described the technic of its use. His experience with thirty-six cases seems to him to prove that it will heal in a pus wound, and he has shown it to be true in five instances, as well as in an equal number where a clean wound became infected after the implantation of such a contrivance.

DISCUSSION.

Dr. D. A. K. Steele thinks it is possible to implant a filigree in an infected wound of the abdominal wall and have its silver strands become a part of the scar tissue, prevent hernia, and cause no local irritation, even though in the lapse of time the original network may become broken or separated into fragments. He has always regarded the permanent introduction of non-absorbable material, such as silver wire, iron wire, silk or silkworm gut, into the living tissues as objectionable on account of the frequent necessity for its removal later on by reason of irritation, infection or discomfort to the patient. Many times he has been called on to remove buried loops of wire or silk that have produced distressing symptoms. He prefers autoplastic methods, and his belief is that in cases like those described by Dr. Bartlett it would be perfectly feasible to bring the muscular or aponeurotic structures in close apposition by the use of herring-bone suture of chromicized catgut or kangaroo tendon, which will give equally as good permanent results.

Dr. Alexander Hugh Ferguson has met with no case which he has not been able to handle by plastic procedures. There have been some cases in which he has refused to operate which might be suitable for the filigree. He thinks the author makes a bold statement when he advises the filigree as a phophylactic in suppurating wounds of the abdominal wall. In large gaping wounds it is much easier to insert the filigree than to effect approximation by well-known surgical methods. Its ease of application will induce many men to try it who would not undertake a plastic operation. The author's statistics are in favor of it, although he thinks sufficient time has not elapsed to prove this. The first disadvantage of the filigree is that it is a foreign body; second, its instability in the tissues; third, it is doubtful whether it is a prophylactic in such cases against hernia.

Dr. M. L. Harris has had no experience in implanting silver wire filigrees, but he has had some experience in taking them out. His first case was a patient operated on several times, primarily for appendicitis, and then operation was undertaken subsequently to close a ventral hernia, and finally a wire mattress of filigree was implanted in the abdominal wall. It healed in nicely, but after a time it gave the patient so much trouble and so much pain that he insisted on its removal. The wire had broken into small pieces, each one of which furnished one or two ends which were sticking in the tissues.

Dr. E. Wyllys Andrews said that if he has a clear picture of Dr. Bartlett's paper, it is simply this: That over a row of pegs he constructs a filigree by first darning artificially, and then a natural kind of network is constructed which is

able to stand alone and hold in shape. Here we have a principle analogous to that of heteroplasty, as seen in the Moorhof bone plug. With the wire network granulation tissue and connective tissue fill out the space or cavity, and he thinks there can hardly be any question as to the practicability of this framework.

HUMAN GLANDERS.

Drs. A. D. Bevan and Walter Hamburger reported three cases of glanders occurring in the human subject.

DISCUSSION.

Dr. Maximilian Herzog mentioned two cases which he saw in Manila that were diagnosticated as smallpox. Commonly, the disease in the human being simulates either smallpox, pyemia, erysipelas or syphilis. The agglutination test is not reliable. The biologic test is reliable and simple, and can be made in a few days.

Dr. F. Robert Zeit reported two more cases of glanders occurring in Chicago, one of which he saw himself, and the other having occurred in the practice of Dr. Bayard Holmes.

Dr. Adolph Gehrmann mentioned a still earlier case of glanders in the human subject than the one related by Dr. Zeit. This was demonstrated before the society some fifteen years ago. This case also occurred in the practice of Dr. Holmes. He mentioned an interesting report from the Royal Victoria Hospital in Montreal of a case of glanders in a man who lived for about seven years, having exacerbations now and then, but who finally died of a generalized infection.

Dr. D. A. K. Steele reported cases and exhibited the following specimens: (a) Stab Wound of Fetus in Utero at Six and a Half Months; Delivery of Live Child at Full Term. (b) Inversion of Uterus During Labor, with Subsequent Gangrene. (c) Fibroma of Broad Ligament.

MADISON COUNTY.

The Madison County Medical Society met at the Lutheran Hospital at Granite City, on June 5, 1908, at 2 p. m., with President Waldo Fisher in the chair. Members present: Drs. Barnsback, H. R. Lemen, Hastings, Luster, Scott, Kiser, Harlan, Tully, King and J. H. Fiegenbaum. Visitors: Drs. Kaeser, Gibberson, Ingham, Paul Howe and Emma Howe. On motion the courtesy of the society was extended to visiting physicians. Paper was read by Dr. R. D. Luster on "Diagnostic Value of *X*-Ray in Fractures and Dislocations," which was discussed by Drs. Lemen, Kiser, Ingham, Gibberson, Howe, Kaeser and Howe, Dr. Luster closing the discussion, showing plates revealing fractures and dislocations by *x*-ray, which was of great interest to the members. Dr. C. R. Kiser presented a paper, "Bullet Wound of Brain with Recovery," which was discussed by Drs. Barnsback, Lemen and Fisher. Discussion closed by Dr. Kiser, showing *x*-ray plates of the course taken by the bullet. On request of President Fisher it was moved and carried to refer the applications of Drs. Porter and Gibberson to the Board of Censors. The president appointed permanent auditing committee consisting of Drs. Luster, H. R. Lemen and Barnsback. Applications for membership of Drs. Paul Howe and Emma Howe of Granite City were referred to Board of Censors to report at our next regular meeting. On motion it was ordered that we meet in Alton on the first Friday in September, 1908. On motion adjourned.

J. H. FIEGENBAUM, Secretary Pro Tem.

MARSHALL-PUTNAM COUNTY MEDICAL SOCIETY.

In compliance with the previously expressed preference of a majority of the physicians of Marshall and Putnam counties, a convention of such physicians was called to meet at Henry, Ill., on May 12, 1908, by Dr. C. C. Hunt, of Dixon, councilor for the second district. Pursuant to such call there assembled in the parlors of the Camys House in that city the following members of the local profession:

Drs. S. O. Hendrick, J. A. Swem, E. A. Hall, of Henry; C. H. Keemp, of Lacon; R. G. Dakin, W. A. Simmons, Magnolia; H. B. Royerson, Granville; W O. Ensign, Rutland; E. F. Peterson, P. S. Mabry, Varna, and T. C. Cogsdall, of Henry; also as visitors Drs. C. C. Hunt, Dixon; E. W. Weis, Ottawa; J. F. Percy, Galesburg; J. W. Pettit, Ottawa; Wm. Schoenneshoefer, Lostant, and Frank Allport, of Chicago. Dr. Hunt, councilor for the second district, called the convention to order at 2 o'clock p. m., and briefly but clearly stated the objects of the meeting and asked for the selection of temporary officers. Dr. W. A. Simmons, of Magnolia, was then chosen chairman and Dr. E. A. Hall, of Henry, secretary of the convention.

A program, previously arranged and announced by the councilor and carried out, was as follows: Medical Organization in Marshall and Putnam Counties, a brief historical sketch by Dr. W. O. Ensign, of Rutland, was read. Following this the question of a joint and united society for the two counties named was then affirmed and a combined organization effected as the Marshall-Putnam County Medical Society, with permanent officers for the current year as follows: President, Dr. W. A. Simmons, Magnolia; vice-president, Dr. E. A. Hall, Henry; secretary-treasurer, Dr. W. O. Ensign, Putnam; delegate, Dr. R. G. Dakin, Magnolia; alternate delegate, Dr. S. O. Hendrick, Henry. The first three named to act as a board of censors until further arrangements should be made.

The program was then continued as further arranged, Dr. R. G. Dakin, of Magnolia, presenting an interesting paper entitled Report of a Case of Erysipelas, which provoked much discussion. Dr. Frank Allport, of Chicago, considered The Commoner Forms of Eyeball Injuries* in a very practical and interesting paper, which was highly appreciated and for which he received the unanimous thanks of those present. Dr. Ensign next presented the subject of The Importance, Methods and Results of Medical Organizations. Dr. Percy having to return home, his paper on The Physician as an Individual in Relation to His County Society was unavoidably omitted, but it is hoped was only briefly postponed. After the consideration of some further matters of business, the society adjourned to meet in semi-annual meeting at Varna on the second Tuesday in October next. It is reasonably anticipated that this organization, so auspiciously begun, will enlist the cordial interest and cooperation of the entire profession of the two counties it represents.

ROCK ISLAND COUNTY.

The regular meeting of the Rock Island County Medical Society was held at the Manufacturers' Hotel, Moline, June 9, at 8 p. m. Routine business was disposed of and the following names were presented for membership: Drs. A. T. Leipold, Emma T. Cooper, Henry E. Beck, Perry H. Wessel, all of Moline; Dr. J. H. Ellingworth of Watertown; Dr. A. C. Hansen, Silver. A paper on the Pathology and Etiology of Enteritis in Children was read by Dr. E. M. Minnick of Moline and discussed by Drs. R. C. Meyer of Moline, Asay of Rock Island, and Dr. Minnick. Dr. Louis Ostrom of Rock Island demonstrated a pair of anterior cutting forceps and a universal self-retaining nasal speculum which he had devised. A lunch and social hour was enjoyed after the program.

THE ÆSCULAPIAN SOCIETY OF THE WABASH VALLEY.

FOUNDED 1846. MEMBERSHIP 300. REGULAR MEETINGS HELD IN MAY AND OCTOBER.

OFFICERS:

J. C. Epperson, Kansas Ill.....President.
J. H. Weinstein, Terre Haute, Ind.....Vice-President.
H. N. Rafferty, Robinson, Ill.....Secretary-Treasurer.
Censors—J. T. Montgomery, Charleston, Ill.; W. E. Bell, Terre Haute, Ind.; Mark Rowe, Paris, Ill.; C. E. Price, Robinson, Ill.; and T. E. Walton, Danville, Ill.

At the sixty-first semi-annual meeting, held at Charleston, Ill., May 28, 1908, "Practical School Hygiene" was treated by Dr. O. W. Ferguson, Mattoon, Ill., in

*For text of paper see page 206.

which the author said that the public schools offered a wide field for the exercise of preventive medicine, first, in the proper construction and arrangement of the building; second, in securing the services of a neat and clean janitor; and third, in the proper recognition of the congenital and acquired defects in sight and hearing, and in the early detection of contagious and infectious disorders common to school children. In presenting a paper on "Sanitation," Dr. R. R. Trueblood of Lawrenceville, Ill., said: "In the present age it is not so much what the practitioner of medicine is able to cure, as what he is able to prevent, that makes him a benefactor." He spoke of the rôle of the mosquito and house fly in the spread of disease, of the dangers from the infected drinking-cup, kissing, the common towel, and promiscuous expectoration. Besides sunlight and fresh air, there were four disinfectants worth mentioning, viz., steam, formaldehyd, sulphur and lime. Like the preceding speaker, he emphasized the importance of the proper location, ventilation and sewerage of our public school buildings. He said in closing: "Perfect hygiene is to the general practitioner what asepsis is to the modern surgeon, and the nearer the person individually, or the public at large, observe the laws of hygiene, so much less will be the need of medical interference."

In a paper on "Sanitation by Cremation," Dr. James L. Reat started out with the basic principle that a supply of air, water and combustible material was necessary for the maintenance of all animal life. The laws of hygiene demand that the air we breathe and the water we drink be pure, and inhumation seriously interferes with these very necessary conditions. Science has shown that burning simply does quickly and without the attendant dangers, what putrefaction accomplishes after a long time. The public welfare increases in importance as populations grow, and if the practical application of the laws of hygiene can be better secured by cremation than by inhumation, as has been abundantly proven, then the former method should prevail.

"When Shall We Remove the Ovaries" was the title of a paper by Dr. E. L. Larkins of Terre Haute, Ind. He said this question was of great importance to the woman, of great scientific and practical interest to the physician, and of vital interest to the human race. He thought the ovaries should not be removed when pain was the only symptom, nor for simple prolapse, nor when there were pathological changes in the uterus demanding hysterectomy, with normal ovaries. He also condemned ovariotomy for the attempted relief of hysteria or hystero-epilepsy, saying that these unfortunate women were usually made worse rather than benefited by the procedure. He advocated the early removal of all ovaries the seat of incurable inflammatory changes, or of new growths, both benign and malignant. This question is of interest to physicians because of the physical and psychical effects which the normal and abnormal ovaries exercise over the bodily and mental life of women. The unsexed woman is often to be pitied, knowing she can not bear children if she would. The body and face lose many feminine characteristics, becoming stout and coarse. Deprived of the power of carrying out the purpose for which she was created, she often becomes the prey of a nervous unrest from an intermittent melancholia to a violent delusional insanity.

Dr. H. J. Pierce of Cloverland, Ind., reported on the use of antitoxin in 38 cases as a curative agency, and its use for the purpose of immunizing in 42 cases, all within a period of two years. The maximum dosage was 58,000 units, given to a child 2½ years old, in which the membrane involved both tonsils, tongue, roof of mouth, uvula and nose. In this series of cases there were no deaths, and in only a few instances such after-symptoms as rashes, joint-pains, etc.

Dr. John Marten, Tolona, Ill., reported a case of "Cancrum Oris" in a girl of 5 years, following chicken-pox, measles and typhoid fever, in the order named. Fortunately a line of demarcation formed, the slough separated, and the patient recovered on supportive and cleansing treatment.

In a paper entitled "Cholecystectomy, the Operation of Choice," Dr. W. E. Bell of Terre Haute, Ind., strongly advocated the removal of the gall bladder in preference to its incision and drainage. He supported this contention by the statements that the gall bladder was without function, that the bile itself probably has no part to play in the human economy, and that the complete removal of the

organ was the more surgical procedure, just as appendectomy was preferable to leaving behind an appendix which may later give rise to trouble. He concluded with the statement that in the same class of cases the mortality in cholecystectomy would be as low or lower than if the organ were simply drained, while the post-operative period was much more comfortable if the former operation was done.

Dr. G. W. Fuller of Paris, Ill., reported a "Case of Diverticulitis," being in detail a left-sided abdominal inflammation in the region of the sigmoid, apparently originating from a highly inflamed diverticulum. This diverticulum was about seven inches in length, and was at first thought to be a transposed appendix, but investigation showed that it was attached to the sigmoid and to the parietal peritoneum. This was ligated and removed, the wound closed, and the patient made a slow recovery.

Dr. S. C. Glidden of Danville, Ill., reported "Two Unusual Surgical Cases." The first was a woman, 22 years of age, upon whom a double ovariotomy was done. On the ninth day following, the patient jumped from the window to the ground below, a distance of thirty feet. Examination showed a resulting fracture of the bodies of the eighth and ninth dorsal vertebræ, with loss of plantar reflex, paralysis of right leg, bowels and bladder. The abdominal wound was partially separated, as the skin sutures had been removed just the day before. The fractured vertebræ were reduced, a plaster jacket placed on the patient, and she made a good recovery.

The second case was one of "Traumatic Diaphragmatic Hernia," in a man of 30 years, who had a stab-wound about two and one-half inches long on the left side of the chest, from the seventh to the ninth ribs, and just external to the nipple line. The wound had been closed before Dr. Glidden saw the patient, and was let alone. The patient complained of pain over the epigastric region and was nauseated. These symptoms increased, the pulse became thready, and the abdomen scaphoid. Death ensued on the ninth day after the injury, the temperature standing as low as 94 F. and 95 F. for two days before. Postmortem examination showed the knife had made a cut of one and one-half inches through the diaphragm, through which the entire stomach had passed into the thorax.

Dr. C. F. Newcomb of Champaign, Ill., read a paper on "The Treatment of Ankle-Sprain by the Adhesive-Strapping Method." He said the three popular methods of treating these sprains were: (1) The plaster dressing applied at once; (2) the use of hot applications and elevation, with the plaster applied later; (3) the use of hot fomentations, massage and passive motion. He thought the method of strapping by adhesive, if properly applied, combined all of the good points of the three methods above mentioned, with many advantages over either. He described the manner of application, stating that the patient could usually get around within a few hours, and with comfort.

The following applicants were elected to membership: Drs. O. E. Fink, Terre Haute, Ind.; R. D. Cruikshank and F. A. Baumgart, Danville, Ill.; T. A. Bryan, Lerna, Ill.; J. F. Hilgenberg, Pesotum, Ill.; H. L. Smith, Ivesdale, Ill.; J. G. Baker, Mattoon, Ill.; and C. P. Gore, Lawrenceville, Ill. The following applications for membership were received, to be voted on at the next annual meeting: Drs. W. J. Carter, E. F. Dixon, E. Summers and A. T. Summers, Mattoon, Ill.; T. C. Lonks, Prairieton, Ind.; G. H. Hunt and Mott Arnold, Paris, Ill.; D. N. Canerer, Chrisman, Ill.; J. P. Prestley, Newton, Ill.; A. Lyman Lowe, Robinson, Ill.; T. A. Dicks, Broadlands, Ill.; and Robt. S. McCaughey, Hoopeston, Ill.

At 7:30 p. m. the society adjourned to the dining-room of the Laws House, where an elegant banquet was served by the Coles County Medical Society.

UNION COUNTY.

The Union County Medical Society held a special meeting in the Presbyterian Church at Colden, Ill., on June 24. Rev. Charles McClure, pastor of the church, opened the meeting with prayer and gave some well-chosen remarks relative to the present attitude of the medical profession toward the church. The society enjoyed two fine selections of music rendered by a ladies quartette of Colden. The papers of Dr. E. V. Hale on "Some Suggestions to the Society" and by Dr. L. J. May on "Cholera Infantum" elicited quite a discussion. Several visitors were present. Refreshments, ice cream and cake, were served by the ladies on the lawn. This society is growing not only in numbers, but much interest is being manifested by its members.

NEWS OF THE STATE.

PERSONAL.

Dr. E. C. Dudley, Chicago, and son sailed for Havre July 18.

Dr. John B. Murphy and family, of Chicago, left for Europe July 12.

Dr. and Mrs. Arthur H. Brumback, Chicago, left for Europe early in July.

Dr. James A. Rutledge, Elgin, has been made a member of the board of directors of Modern Woodmen of America.

Drs. Alfred D. Kohn and Alexander L. Blackwood, of Chicago, have been appointed members of the board of education.

Dr. S. Walter Ransom has been appointed associate professor of anatomy in the Northwestern University Medical School, Chicago.

At the annual meeting of the South Side Medical Society, Chicago, June 19, Dr. Edwin B. Tuteur was elected president and Dr. F. Gurney secretary.

Drs. William A. Evans and George W. Webster, Chicago, have been elected members of the executive committee of the Chicago local advisory committee of the American Health League.

Dr. Don A. Vanderhoof, who has been abroad during the last year, has now returned and is located in the William Brown Building, Rockford, and is now associated with Horace M. Starkey, M.D., in eye, ear, nose and throat work.

NEWS.

The twenty-second season of the *Daily News* Fresh Air Fund Sanitarium, Lincoln Park, Chicago, began June 29.

The finance committee of the City Council has raised the salary of the city physician, Dr. L. Blake Baldwin, from $3,000 to $4,000.

Dr. Roy C. Richards, Hopedale, accused of violating the "dram shop act" by prescribing beer for a patient, is said to have pleaded guilty of technical violation of the law and to have been fined $20 and costs.

Jackson Park Sanitarium, Chicago, was opened for the season June 27. Addresses were made by Dr. W. A. Evans, Commissioner of Health, Dr. Alfred C. Cotton, superintendent of the sanitarium, and others.

Mrs. L. Brunswick, Mrs. F. Kantz, Hanna K. Blomberg, and H. H. Hill, charged with practicing medicine without licenses, are said to have been found guilty and fined $100 and costs each. None of the defendants appeared in court.

A fire on June 21, originating in the clinical laboratory of the College of Physicians and Surgeons, Chicago, caused considerable alarm to patients in the hospitals near by, although no one was injured. The total loss was about $3,000.

The Northwestern University Medical School, Chicago, is about to erect a dispensary on property on Calumet Avenue, north of Mercy Hospital, which was acquired by Dr. John B. Murphy for the institution and was conveyed by him to the university, June 26, for a consideration of $7,801.

The fourth consecutive season of the *Tribune* Summer Charities at Algonquin was inaugurated the first week in June. Building operations on the second building of the group have already been commenced. This building is to be a central pavilion, containing a dining hall, diet kitchen, laundry, general offices, etc.

Iroquois Memorial Emergency Station, No. 1, is to be opened at 87 Market Street, Chicago, by the Iroquois Memorial Association. The association is prepared to spend $25,000 in equipping the building, and it will be provided with everything deemed necessary. The first floor is to be an ambulance station, the second a dispensary, and on the third floor will be the operating room and beds for patients.

Ernest P. Bicknell, Chicago, who has recently been appointed national director of the American National Red Cross Society, served for five years as secretary of the Indiana State Board of Charities, during which time he brought about several important reforms, both in the charity work and in the penal system of the state, introducing the indeterminate sentence and the parole. Mr. Bicknell also had charge of the Chicago Bureau of Charities for some years, taking an active part in the investigations of the county hospital and serving as a member of the present commission charged with the building of a new Cook County infirmary and tuberculosis hospital. In the relief work at San Francisco, Mr. Bicknell showed distinguished ability. He went to represent the Chicago relief committee, which contributed $700,000 to the fund used for relief work, and it was while there that he evolved the idea of making charity organizations generally auxiliary members of the American National Red Cross Society, with the view of giving a nucleus of trained relief workers who could be called upon for immediate service in case of emergencies. It is announced that this excellent plan will be put in effect at once.

MEDICAL SOCIETY NOTES.

The physicians of LaSalle and Peru, on June 23, met and organized the Twin City Medical Society, a branch of the LaSalle County Medical Society. The following officers were elected: President, Dr. B. J. Nauman, Peru, and secretary, Dr. Frederick A. Guthrie, LaSalle.

The next meeting of the Englewood Branch of the Chicago Medical Society will be held at 9 p. m. Aug. 4, 1908, at Englewood Hospital, Sixtieth and Green Streets. Program: Toxemias in Pregnancy, (a) Clinical Types, J. G. Campbell; (b) Renal Insufficiency, A. G. Bosler; (c) Eclampsia, G. J. Hagens. Everybody welcome. Messages may be sent to Wentworth 342.

The Stephenson County Medical Society held its annual meeting, July 16, and elected the following officers: President, Dr. A. H. Kober, McConnell; Vice-President and Treasurer, Dr. D. C. L. Mease, Freeport; Secretary, Dr. J. Sheldon Clark, Freeport; Censor, Dr. Smith C. Thompson, Cedarville; Delegate, Dr. W. J. Rideout; Alternate, Dr. D. C. L. Mease.

The officers of the Englewood Branch of the Chicago Medical Society entertained Dr. James Wiley Pettit, president of the Illinois State Medical Society, at a dinner at the South Shore Country Club on the occasion of his visit to the branch at its first meeting of its fiscal year, July 7, 1908. Dr. Pettit was met at the train by a large committee and conveyed to the club by autos. Covers were laid for fourteen, and a most delightful course dinner, gotten up in the club's usual manner, was enjoyed by all present. Dr. Pettit, in his well-chosen remarks, assured those present that he was "with them" in everything that was for the best interests of the society and for its upbuilding, and that it was his intention to take the time to visit every county and district society in the state. He said that he expected this would take some 100 to 125 days at least, but that he was glad to have the opportunity of doing at least that much toward the upbuilding and better organization of the society.

After a ride through the park system the party repaired to the Englewood Hospital, the place of meeting. A large and enthusiastic gathering was waiting and the Doctor was given a very cordial reception. After all had met the visitor of the evening the president, Dr. Carl Langer, called the meeting to order by introducing Dr. Pettit to the society. After a few remarks expressing his very great pleasure at being present, Dr. Pettit again assured the society of his interest in the local society and that he hoped to be able to visit all during his term of office.

The regular program of the evening was then announced as follows: Dr. A. G. Shortle, late of the Englewood Branch, now of Albuquerque, N. M., "Climate as a Factor in the Treatment of Tuberculosis"; Dr. J. W. Pettit, "The Modern Treatment of Tuberculosis." Dr. E. C. Morton was called upon to open the discussion, which was followed by a general discussion by a large number of those present. The society then adjourned after passing resolutions thanking the essayists of the evening and Dr. Pettit for his kind visit to the society.

PUBLIC HEALTH.

Elgin reports 18 cases of smallpox and eight houses under quarantine.

Four cases of smallpox are reported at the Rock Island County Infirmary.

Joliet still has 9 cases of smallpox; seven of the patients are in the Isolation Hospital and all are on the road to recovery.

There have been three additional cases of smallpox discovered at the Rock Island County Farm, but none of the patients is seriously ill.

At the Illinois State Board of Health examination, held in Chicago, June 24 and 25, there were 265 applicants, making the largest class on record to take the examination.

The State Board of Health, through its secretary, Dr. James A. Egan, Springfield, is advertising for sealed proposals for diphtheria antitoxin for free distribution by the board. The legislature has appropriated $30,000 for this purpose.

On June 25 a hundred physicians, under the direction of Drs. Heman Spaulding and I. Donaldson Rawlings of the Department of Health of Chicago made a house-to-house inspection of the territory lying between State and LaSalle and Sixteenth and Sixty-fourth Streets. Every house was visited and the tenants were compelled to be vaccinated unless they could show satisfactory scars.

Dr. J. A. Egan, secretary of the Illinois State Board of Health, has announced for the information of physicians and health officers that in 1905 the General Assembly made provision for the care and treatment of poor persons duly certified by regular physicians to have been bitten by rabid animals, or otherwise put in danger of infection from hydrophobia, and that such persons unable to pay for treatment themselves will be cared for at the expense of the state at the Pasteur Institute, 228 Dearborn Avenue, Chicago, the institution selected by the Illinois State Board of Health.

Mortality of Chicago During the First Half of 1908.—According to the statistics of the Department of Health, 1,998 fewer people died during the first six months of 1908 than during the corresponding period of last year. The diseases in which the greatest improvements in the mortality rate is shown are pneumonia and pulmonary tuberculosis; the actual decrease in the number of deaths from pneumonia is 949, from tuberculosis is 174. On the other hand, deaths from diarrheal diseases in children have increased, especially in children under 1 year, the increase over last year being 183. June had the very low general rate of 11.77 per thousand of population. This is 6.5 per cent. lower than the ten-year average for June and 13.4 lower than June, 1907. In the last fifty years there have been but two Junes with a lower rate. The total deaths reported during the month—2,095—were 348 fewer than the preceding month and 260 less than the returns of June, 1907. Of the diseases which show the greatest reduction, pneumonia leads, with 103 fewer deaths than the preceding month and 133 fewer than the corresponding month of last year. There were 24 fewer deaths from consumption than in the preceding month and 12 fewer than the compared period of 1907. The reduction in contagious diseases similarly compared was 27 and 42. A marked increase is noted in deaths from diarrheal diseases. The 153 deaths reported during the month by 22 and the corresponding month of last year by 38.

MARRIAGES.

FONROSE LAWSON, M.D., Sullivan, Ill., to Miss Helen Greer, of Gays, Ill., June 10.

JAMES F. HILGENBERG, M.D., to Miss Grace Mix, both of Pesotum, Ill., June 17.

HARRY V. KITZMILLER, M.D., to Miss Eva Lee, both of Smithshire, Ill., June 23.

J. U. CARTER, M.D., Mattoon, Ill., to Miss Bessie Lockie, of Gault, Ont., June 24.

WALLACE M. BURROUGHS, M.D., to Miss May A. Quilter, both of Chicago, June 27.

C. M. JACK, M.D., of Niantic, Ill., to Miss Charlot Nelson, Bloomington, Ill., June 18.

RALPH MILLS, M.D., Decatur, Ill., to Miss Ethel Bumgardner, of McNabb, Ill., June 1.

OLANDER E. WALD, M.D., Chicago, to Miss May Augustine, of West Point, Ind., June 17.

C. ROY JOHNSTON, M.D., of Decatur, Ill., to Miss June Riggs, of Saybrook, Ill., June 24.

ALBERT MICHAEL WICKSTROM, M.D., to Emma Rühi-Maki, M.D., both of Chicago, June 10.

HUGH T. MORRISON, M.D., to Miss Mary Logan Coleman, both of Springfield, Ill., June 23.

THOMAS HOUSTON D. GRIFFITTS, M.D., Springfield, Ill., to Miss Elizabeth Anne Glynn, of Cairo, Ill., June 30.

JAMES MALCOLM MILLER, M.D., Villa Grove, Ill., to Miss Inez A. Whitworth, of St. Louis, Mo., at St. Charles, Mo., recently.

DEATHS.

ALEXANDER E. BOWMAN, M.D. (Years of Practice, Ill.), of White Hall; died at his home in that city, June 19, from senile debility, aged 91.

FRANK O. CULTER, M.D. Pulte Medical College, Cincinnati, 1888; of Gibson City, Ill.; died in Chicago, June 26, after an operation for gallstones, aged 48.

JAMES A. CONVERSE, M.D. United State Medical College, New York, 1880; of Danville, Ill.; died at his home in that city, June 28, after a short illness, aged 66.

GEORGE K. TILLOTSON, M.D. Rush Medical College, Chicago, 1876; of Chicago; died in Lakeside Hospital, July 2, from septicemia, after an illness of two weeks, aged 58.

HENRY GANTER, M.D. University of Würzburg, Germany, 1875; died at his home in Floraville, Ill., from cerebral hemorrhage, June 24, after an illness of three days, aged 59.

JAMES A. LYDSTON, M.D. Rush Medical College, Chicago, 1885; formerly professor of chemistry in the College of Physicians and Surgeons;

died suddenly at his home in Chicago, July 6, from the effects of the heat, aged 47.

JOHN RANDOLPH WEBSTER, M.D. Rush Medical College, Chicago, 1858; Jefferson Medical College, Philadelphia, 1864; a member of the American and Military Tract medical associations, who recently celebrated his fiftieth anniversary as a practicing physician of Monmouth, Ill.; died at his home in that city, June 19, aged 72.

OLIVER L. DANIEL, M.D. Hospital College of Medicine, Medical Department, Central University of Kentucky, Louisville, 1896; a member of the American Medical Association; surgeon to St. Andrews' Hospital, Murphysboro, Ill.; local surgeon to the Big Muddy Coal and Iron Company, and one of the most prominent practitioners of southern Illinois; died at his home, June 21, aged 43.

FRANK HUGH MONTGOMERY, M.D. Rush Medical College, Chicago, 1888; associate professor of skin and genitourinary diseases, Rush Medical College; attending dermatologist to St. Elizabeth's, St. Anthony de Padua and Presbyterian hospitals; a member of the consulting staff of Oak Park Hospital; a member of the American Medical Association, American Dermatological Association, Congress of American Physicians and Surgeons, Illinois State Medical Society, and of Chicago Medical, Pathological and Medicolegal societies; co-author of "A Practical Treatise on Diseases of the Skin," "A Manual of Syphilis and the Venereal Diseases," and other works on these subjects; who had achieved national prominence as an authority in his specialty; was accidentally drowned while boating on White Lake, Michigan, July 14, aged 46.

ILLINOIS STATE MEDICAL SOCIETY

MEDICO-LEGAL COMMITTEE.

EXECUTIVE COMMITTEE.

FROM ILLINOIS MEDICAL SOCIETY.

H. N. Moyer, 103 State St., Chicago. Central 2751.
C. D. Pence, 859 Turner Ave., Chicago. Canal 1335.
W. L. Noble, 100 State St., Chicago.
M. L. Winstead, Wetaug, Ill.
E. W. Weis, Ottawa, Ill.

FROM CHICAGO HOMEOPATHIC MEDICAL SOCIETY.

N. B. Delameter, 31 Washington St., Chicago. Central 1926.
J. B. Cobb, 42 Madison St., Chicago. Central 32.

GENERAL COUNSEL.

Calhoun, Lyford & Sheean, 806 The Rookery, Chicago.

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Carroll—G. W. Johnson	Savanna
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H. N. Moyer	103 State St., Chicago
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